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THE DIAGNOSIS AND TREATMENT OF DIVERTICULITIS OF THE COLON.[1]

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A FEW words must be said of the gross pathology of diverticulosis, the necessary forerunner of diverticulitis. Intestinal pressure pushes the mucosa through the muscle bundles, and a pulsion pouch is formed, lined with mucosa covered with serosa and perhaps a few attenuated muscle fibres. Most common in the pelvic colon, from the pelvi-rectal junction, these pouches may extend almost to the caecum in varying numbers. An average-sized pouch would be 0·6 centimetre (one-quarter of an inch) in diameter; the opening of communication with the bowel is always small.

When solid intestinal contents have entered or accumulated in a pouch it is difficult to imagine spontaneous emptying; the filling and partial emptying of opaque material are, however, shown by radiology. Moderate distension of a diverticulum is not necessarily followed by diverticulitis; I have seen acute and fatal diverticulitis limited to one pouch while each of the neighbouring pouches contained a firm cast of fæcal matter. Probably it is more common to find the inflammation not limited to the walls of the pouch, but extending widely in the wall of a segment of the colon, some inches in length. This condition is similar to that sometimes found in the wall of the caecum due to acute appendicitis; typhlitis and perityphlitis were a

[1] Read at a meeting of the South Australian Branch of the British Medical Association on February 24, 1938.

more frequent finding when operation for appendicitis was delayed for various reasons. This massive inflammation with thickening of the colonic wall makes the tumour that is sometimes felt across the lower part of the abdomen or ascending the left flank. The swelling of the *appendices epiploicæ* adds to the size and firmness of the tumour. Leakage of intestinal contents or migration of organisms is resisted largely by the *appendices epiploicæ*; they lose their globular shape and, flattening out, apply themselves to the affected wall with the accuracy and neatness of a piece of tile work. Neighbouring omentum will share with them this duty of fortification of the damaged wall.

So much, or so little, of the pathology I must be permitted to enable me to speak of the diagnosis and treatment of the disease.

Diverticulitis is an acute disease with a sudden onset accompanied by a rise of temperature and sometimes a rigor; the pain is in the lower part of the abdomen, and not always can one elicit left-sided tenderness; tumour formation as described is a later manifestation. Digital or endoscopic examination through the anus gives no help. Although the condition is often diagnosed as appendicitis (and even called left-sided appendicitis), apart from the position of the tenderness there are differences. Diverticulitis has a more acute and quicker onset and does not run the same climbing and descending course that typical appendicitis does, if undisturbed. The disease varies from day to day in intensity; the patient will sometimes be better for a day or two and then relapse. I was asked in one instance to make a urological investigation, as dysuria and slight hæmaturia were present; in this case the condition proved to be diverticulitis (involvement of the bladder will be referred to later). Vomiting is uncommon and constipation is usual, though rarely diarrhœa or tenesmus occurs. Treatment at this stage aims at physiological rest for the bowel. After the period of fever and tenderness cautious increase in the diet is permitted. Strict avoidance of purgatives and enemata is followed by small frequent doses of mineral oil. If resolution does not take place, an abscess may form or, rarely, perforation may occur. An abscess forms in relation to the inflamed diverticulum and resembles in its behaviour an appendiceal abscess, differing from the latter in position and in its tendency to open into the urinary bladder, which must frequently be adherent to the inflamed colonic loop. If the abscess is drained suitably the results are good. Attempts to investigate minutely the source of the infection are unwise. If fæcal fistula follows, it rarely heals spontaneously. Perforation with escape of intestinal contents is rare. A description of such a case may be given:

After five days' treatment of a patient suffering from typical diverticulitis, with gradual defervescence and relief of pain and tenderness, there was a copious action of the bowels; the excreta was fluid and blood-stained. This action was unprovoked—in fact morphine was in use to assure rest. Within a few minutes of the movement of the bowels the signs of massive general peritonitis appeared. Shock was intense, surgical drainage was declined and could not be pressed, and death occurred in a few hours. A large quantity of fluid intestinal contents evidently flooded the peritoneal cavity through a damaged diverticulum disturbed from its support by the bowel action.

Death from extensive peritonitis occurred also in a case of diverticulitis without perforation. Infective organisms had evidently escaped through the damaged wall and its adherent *appendices epiploicæ* and caused a local peritonitis which was made general by the disturbance of a vigorous purgation. Surgical drainage caused no improvement.

Intestinal obstruction, incomplete and complete, may be caused by a cicatrizing segment of colon, the site of a bygone diverticulitis. Clinically and radiologically the diagnosis from cancer is difficult or impossible. I treated a patient's colon the site of such a cicatricial ring by removal and anastomosis, fully believing the cause to be a ring cancer. Intestinal lavage, excision of the affected segment and drainage through a colostomy in obstinate and frequently relapsing cases have been practised with indifferent success. The behaviour of these patients is capricious; two attacks of diverticulitis may occur within six months, and with no alteration of habits no relapses may occur for the next five years, although many diverticula exist. Again, the freedom from inflammation of the diverticula of the transverse and ascending colons is not explained by the slightly different consistency of the intestinal contents. The diagnosis of the disease depends finally on radiology.

CERTAIN CONSIDERATIONS OF ARTIFICIAL PNEUMOTHORAX IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

By BRIAN A. SERJEANT, M.D. (Melbourne), D.P.H. (Sydney),
Waterfall.

IN attempting to assess the value of any particular method of treatment in pulmonary tuberculosis the physician is confronted by certain problems. In the first instance, many patients afflicted with this disease exhibit a great tendency to spontaneous improvement on routine sanatorium management. In the second place, even if controls are used (this procedure should always be adopted if any form of treatment is being tested, otherwise statistical analysis is impossible), there is a psychological effect on the patient, which is due to the fact that something is being done for him, and that his case is not hopeless. Furthermore, if artificial pneumothorax treatment has been instituted, the necessity for the patient to attend regularly for refills enables a more careful watch to be kept on the progress of the condition.

While I shall not attempt to prove that artificial pneumothorax is superior to other forms of treat-

ment of pulmonary tuberculosis, I can fairly state that the great bulk of expert opinion favours this form of treatment in selected cases. In L. S. T. Burrell's[1] series of cases of all types, in which artificial pneumothorax treatment was instituted, 173 out of a total of 410 patients, or 39·7%, died; while in 90 cases in which satisfactory collapse could not be obtained, 64 patients, or 71·1%, died.

The Objects of Collapse Therapy.

Of the objects of collapse therapy, the first and foremost is rest for the infected lung. Another desired result is approximation of the walls of any existing cavities in the lung tissue when collapse is brought about. As to the mechanism of collapse therapy, it is well to remember that the lung is allowed to collapse, and not forced to do so. The term compression of the lung applied to artificial pneumothorax treatment should be abandoned.

The Selection of Patients for Artificial Pneumothorax.

Pneumothorax may be attempted on patients under fifty years of age, provided the physiological age is not above the actual age in years. Patients possessing a placid disposition are better subjects for artificial pneumothorax than those who are highly introspective or neurotic. The condition of the patient as well as that of the lungs must be taken into account. In acute pulmonary tuberculosis, when the patient is toxæmic and the disease is unilateral, the patient and his lung are both in great need of rest; but in order to rest his lung by artificial pneumothorax, a certain disturbance of an acute focus is necessary. This may prove a source of danger, but a spread into the contralateral lung often occurs if nothing is done. When the lesion is acute and exudative, considerable clearing of the lung fields may take place if the patient is ordered absolute rest for six to ten weeks. If, however, the lesion is showing signs of breaking down, collapse is certainly desirable, if this can be brought about without precipitating involvement in the contralateral lung.

Such a case presents rather a problem, and a most careful scrutiny of the patient by physical examination, as well as an expert and painstaking examination of the X ray film, is absolutely essential. The problem here in the acute case in which there is a moderate or considerable unilateral lesion, particularly if the lesion is breaking down, is as follows: the involved lung will certainly benefit by collapse, but what of the contralateral lung? Is it going to remain apparently clear, or is the disease going to gain a footing in this situation also? The physical state of the patient and the X ray film give us some indication of what we may expect to happen, but they do not forecast infallibly the future progress.

In the X ray film reticular shadows towards the periphery of the lung fields should be regarded with suspicion. It is at times difficult to be absolutely certain that the contralateral lung is perfectly free from infection, and the term "better lung" rather than "good lung" may be wisely employed. Spread into the contralateral lung may be very rapid, and I have seen this occur, and to a considerable degree, in only fourteen days. The routine use of such a test as the Houghton index,[2] although somewhat tedious to carry out on large numbers of patients, may provide us with further information as to the resistance of the individual.

Considering every aspect of the case, it appears reasonable to order the acutely toxæmic patient absolute rest for a few weeks before collapse therapy is undertaken, even if the contralateral lung appears clear, as it is not possible to determine exactly how this organ will fare if collapse is instituted immediately. If collapse is delayed too long, the chance of carrying out this form of treatment successfully becomes more remote, as pleural adhesions have more time to develop, rendering effective collapse less probable.

If under conditions of absolute rest toxæmia does not subside and the disease remains substantially unilateral, the induction of artificial pneumothorax appears the best treatment.

In the more chronic case the problem of spread into the contralateral lung is not nearly so great; small established lesions in this situation are not necessarily a contraindication, and in fact frequently diminish when the more involved lung is in a state of collapse, provided the management of the case is thorough and adequate rest is insisted upon. In these cases it appears wiser not to induce complete collapse of the lung, but to maintain a partial pneumothorax until sufficient time has elapsed to enable the progress of the other organ to be noted.

Such treatment will at least partly control toxæmia and symptoms from the side of the collapse, while the contralateral lung will have more work to do and an increased blood supply. It is advisable, therefore, to order the patient a rather longer period of rest than when the contralateral lung appears clear.

It may well be mentioned that contralateral spread is by no means unknown in these cases; it is occasionally seen where there was no obvious lesion in this lung prior to collapse of the diseased organ. If a very careful scrutiny of the X ray film is made, sometimes an area will be noticed in the mid-zone of the lung of a meshed or reticular character, or increased markings running from the upper hilar to the subclavicular region, which have apparently been precursors of more obvious patches of infiltration. Whether such areas are actually "lit up" by the induction of an artificial pneumothorax or would have developed into an area of consolidation in any case, it is difficult to determine, but they should certainly be viewed with suspicion and be subjected to careful periodical examination.

In the chronic case, one of the main problems confronting the physician is the difficulty of obtaining a satisfactory collapse, and frequently a good collapse occurs of the lower portion of the lung, which is often relatively free from disease, while the upper, infected part does not collapse, and any cavities which may be present remain open owing to the presence of pleural adhesions.

Another indication for the induction of artificial pneumothorax is recurrent hæmoptysis, when the disease is substantially unilateral, and when the lung from which the bleeding is taking place may be ascertained with a fair degree of certainty.

Artificial pneumothorax may also be induced to enable a patient to return to work earlier than otherwise; but a good rest during the earlier stages of the treatment is essential.

Tuberculous laryngitis, although sometimes cited as a contraindication of artificial pneumothorax, should not be allowed to influence the physician against such treatment, provided the case is otherwise suitable. It may perhaps be argued that the fact that the patient has a tuberculous larynx indicates a poor resistance; nevertheless, if a successful collapse is obtained, both the lung and the larynx will be given optimum conditions for improvement.

The tuberculous patient requiring collapse therapy probably more often than any other is the young female. Such patients frequently acquire the infection in an acute form, and it is here particularly that the possibility of an acute spread into the contralateral lung must be most carefully borne in mind.

When a spontaneous pneumothorax develops in a tuberculous patient, and the condition of the contralateral lung is compatible with successful collapse therapy, consideration should be given to the possibility of continuing the spontaneous pneumothorax as an artificial one. While in theory such a procedure appears reasonable, Wingfield, of Frimley Sanatorium, is of the opinion that treatment of this kind does not give encouraging results.[3]

Radiological Appearance as an Indication of Probable Results.

It must be freely admitted that the routine use of X ray films and fluoroscopy is absolutely essential in the management of the tuberculous patient. This is particularly true when collapse therapy has been undertaken. Apart from the suitability of any particular patient for artificial pneumothorax, estimated both clinically and radiologically, the nature of the lesion as revealed by radiological examination affords us most valuable information as to the chances of success.

Radiological evidence of old-standing fibrotic lesions, exhibiting pleural thickening, diaphragmatic adhesions, obliteration of the costo-phrenic angle, mediastinal displacement and old, thick-walled cavities, suggests that if artificial pneumothorax is capable of induction the collapse will be incomplete, and the treatment will fail to achieve a completely satisfactory result.

While this is substantially true in many cases, occasionally a most unpromising case yields to collapse therapy, provided conditions otherwise are suitable. It is reasonable always to attempt an artificial pneumothorax in such cases, even if, owing to adhesions as shown by the X ray film, the chances of successful collapse appear slender. Such an attempt should not involve trauma to the lung, and the experienced hand will soon detect a thickened adherent pleura.

If collapse is not obtained or if it fails to achieve the desired result; if non-closure of cavities and sputum persist (particularly if the sputum continues to contain tubercle bacilli), or if the patient fails to improve, owing to insufficient collapse of the lung, the possibility of inducing a permanent collapse by thoracoplasty should be seriously considered. It is obviously unwise to continue a useless artificial pneumothorax.

The course of collapse therapy may be conveniently watched by frequent fluoroscopic examinations, which readily show the degree of collapse of the lung, the presence of adhesions or fluid, the action of the diaphragm, and the position of the heart and mediastinum. The contralateral lung is frequently somewhat congested, and fluoroscopy should not be relied upon to reveal areas of early infiltration.

Periodical X ray films are essential to check progress, particularly in regard to early detection of any spread of the disease to the other lung.

The Technique of Inducing Artificial Pneumothorax.

The method of carrying out a refill should be familiar to everyone, but certain points may be conveniently mentioned. First of all a blunt Rivière needle should be used for the induction. The needle may be introduced into the pleural cavity in the anterior part of the axilla, in the posterior part of the axilla below the tip of the scapula, or in the subclavicular region. The latter position may prove dangerous if there is much retraction of the upper part of the mediastinum towards the involved side.

Not infrequently, if difficulty is encountered in finding a free pleural space in the axilla either early or late in the course of treatment, a successful attempt may be made below the tip of the scapula.

It certainly appears wise to proceed slowly with induction of collapse, except in case of hæmorrhage, in which a more rapid pneumothorax is desired. An initial introduction of 300 cubic centimetres of air followed by 350 to 400 cubic centimetres the next day, with a subsequent gradual increase to refills of 700 to 800 cubic centimetres, the interval between injections of air being prolonged by a day on each occasion, usually produces satisfactory results. Even 50 cubic centimetres of air may make all the difference between comfort and distress to the patient after a refill.

In my opinion it is better to refill at moderately short intervals and to introduce relatively small quantities of air, using maximum amounts of 700 to 900 cubic centimetres according to the rate of absorption and the size of the chest. The former varies greatly even in the same subject at different times, and increased exercise appears to cause more rapid absorption of air. It is desirable as far as possible to maintain a constant collapse of the lung, and such a result is more likely if the above procedure is adopted, as in this way so-called

"concertina" action of the lung is prevented. If large amounts of air are introduced at infrequent intervals the lung will tend to reexpand between refills and then collapse rapidly at the next treatment. In such circumstances a maximum of rest will not be maintained, Apart from the actual quantity of air introduced, the intrapleural pressure after the refill is important, and a negative pressure should be maintained at any rate during the earlier stages of the treatment.

The use of positive pressures is, as a rule, undesirable for the following reasons: (i) the chances of tearing adhesions, air embolism and surgical emphysema are greater; (ii) pleural effusion is probably more frequent; (iii) displacement of the mediastinum is more probable; (iv) the patient is more likely to complain of tightness in the chest after the refill.

There are cases, however, in which a positive pressure may be used apparently without injurious effect on the patient. They are: (i) when a partial or selective collapse is present and the pneumothorax cavity is sealed off by adhesions; (ii) when the mediastinum is rigid or retracted towards the collapsed lung, as in chronic disease or after pleural effusion, and when it is desired to produce some special effect, such as closure of cavities.

It must be admitted, however, that even if a final positive pressure is maintained, cavities may remain open, and if much mediastinal displacement is produced the patient may not feel so well and may perhaps lose weight.

The pneumothorax having been induced, the obvious questions to be considered are: (i) What degree of collapse may be expected and how much is desired? (ii) If a satisfactory collapse is obtained, how long should it be maintained?

In consideration of the first question, it may be truly said that as a general rule the degree of collapse obtained falls short of that desired, although of course it is possible to produce too much collapse, particularly if the contralateral lung is under suspicion or the mediastinum mobile. It is rather the exception to find a lung which may completely collapse without resort being had to adhesion section, particularly if the disease is of a chronic nature. There are many cases, however, in which, although the collapse is not absolute, it is sufficiently complete to produce good rest to the lung and to allay symptoms such as cough and sputum. The explanation of this lack of complete collapse is, of course, the presence of pleural adhesions, the natural sequence of one of the commonest accompaniments of pulmonary tuberculosis, namely, pleurisy.

One of the failings of artificial pneumothorax in the treatment of phthisis is its frequent inability to induce collapse of chronic cavities which are causing symptoms and are a source of danger to the patient, while other parts of the lung may collapse more or less completely. In such cases the possibility of a thoracoplasty or phrenic crush, either combined with pneumothorax or alone, should be considered. On the other hand, a lung containing large cavities may respond well to collapse therapy with eventual obliteration of the cavitated areas.

It is worthy of note that it is safer to introduce the needle at a spot remote from the cavity, which, if situated immediately below the pleura, may be opened into the pleural cavity either by the pneumothorax needle or by tearing of adhesions.

In considering the degree of collapse required, it may be said that every patient is a law unto himself. The presence of cavities accompanied by symptoms, a rigid mediastinum, and a sound contralateral lung, indicate the desirability of a more complete collapse than would otherwise be the case. A very mobile mediastinum renders complete collapse difficult or impossible, and if the mediastinum is displaced to a considerable degree a crowding effect will be produced on the contralateral lung. While it is difficult to be dogmatic, the optimum degree of collapse for any particular patient is best obtained by a close correlation of the clinical progress with periodical X ray and fluoroscopic examinations.

A satisfactory collapse having been obtained, it is desirable to maintain the pneumothorax for at least two years in very favourable cases, the time being increased up to five years in cases in which a gross lung lesion is present.

The lung may be allowed to reexpand in the following ways: (i) by increase of the interval between refills; (ii) by reduction of the quantity of air introduced on each occasion.

A combination of the two methods may be conveniently employed, the object being to maintain sufficient collapse to enable the pneumothorax to be carried on should symptoms recur during the period when reexpansion is in progress.

Complications of Artificial Pneumothorax.

I do not propose to deal at length with the complications of collapse therapy, but to mention certain points in this connexion.

Vaso-Vagal Reaction.—A type of vaso-vagal reaction is occasionally observed during a refill, particularly in female patients. The chief symptoms are faintness, pallor and perhaps sweating. A little stimulant will soon counteract the condition.

Pleural Shock.—Pleural shock is due to the needle piercing the pleura or to pleural irritation. It is impossible to foresee its advent, and it varies in severity from faintness to actual death. Fortunately the condition is extremely rare. The treatment consists of an injection of adrenaline and other stimulants, combined with artificial respiration, if necessary.

Air Embolism.—Air embolism is due to air entering a blood vessel and causing emboli in various situations, the chief symptoms being those referable to the central nervous system and cardiovascular system. The methods by which air gains access to a blood vessel are as follows.

1. The pneumothorax needle may actually enter a blood vessel, in which case if air is introduced embolism will result. This accident should be avoided by not allowing air to pass through the needle until it is certain from the manometer movements that the needle is in the pleural cavity, and by not introducing air under pressure.

2. By tearing of adhesions blood vessels may be opened in the lung tissue. As the veins in the thorax contain blood at a negative pressure during certain phases of respiration, air from the pneumothorax cavity may enter the circulation, particularly if a positive pressure is present. According to certain writers[4] this is the more common way in which air embolism is produced. By this means also an artificial pneumothorax may be converted into a spontaneous one.

Surgical Emphysema.—If surgical emphysema occurs from the needle puncture it commonly produces emphysema around the site of the puncture, usually localized, but it may spread over the body. It is generally absorbed in a few days and is not serious, but it may be painful. The mediastinal type of emphysema is, of course, more dangerous. The chief causes of emphysema are a high intrapleural pressure, coughing and trauma, although cases occur in which none of these factors is obvious. A firm pad strapped over the site of the puncture will help to control the condition.

Pain.—Generally speaking, artificial pneumothorax is painless if an efficient local anæsthetic is used. Some slight discomfort may be experienced during the induction, which appears to be due to air spreading in the pleural cavity and separating the two layers of the pleura, as this type of sensation is entirely absent when the lung is further collapsed.

Some tightness in the chest may be noticed some hours after a refill. The cause of this tightness has been attributed to interchange of gases, but it is difficult to visualize how this occurs. The fact that air at room temperature, particularly in winter, will expand when introduced into the pleural cavity may have some bearing on the explanation of this phenomenon. Dragging pain due to adhesions may also occur.

Pleural Effusion.—Pleural effusion is a frequent complication of artificial pneumothorax, occurring in 177 out of 500 tuberculous patients (35·4%) in L. S. T. Burrell's[5] series, while it occurred only once in 71 cases in which collapse was instituted for non-tuberculous conditions of the lung. The fluid may be clear or tuberculous pus, the former being the more frequent.

The advent of a pleural effusion during the course of an artificial pneumothorax is frequently heralded by a sudden diminution in the amount of air that can be introduced at a refill without the intrapleural pressure being raised. The patient may also be febrile for a week or two while the fluid is appearing. A small effusion is of no real moment, but if larger amounts of fluid accumulate aspiration combined with air replacement is the best method of dealing with the case.

Conclusions.

1. In selecting cases for artificial pneumothorax the mentality and cooperative ability of the patient must be taken into account, in order that the best results from the treatment may be obtained.

2. Artificial pneumothorax should be regarded as an aid to and not as a substitute for routine sanatorium treatment, although after treatment at a sanatorium for a suitable period refills may be carried out elsewhere. Provided the patient is in a sanatorium an initial period of absolute rest can be enforced, followed later by sanatorium routine and a gradual increase in exercise.

3. Should the general condition of the patient be good and the disease not acute, small established lesions in the contralateral lung are not considered a contraindication to collapse therapy, and indeed may even diminish during the course of such treatment.

4. Accidents due to artificial pneumothorax are fortunately very rare, and may be rendered even less frequent if air is never allowed to pass through the needle until free negative swinging of the manometer shows that the pleural cavity has been entered. Avoiding the use of pressure is an added safeguard.

5. When it is considered desirable to allow the lung to reexpand, sufficient collapse should be maintained to enable the pneumothorax to be continued should symptoms recur during the process.

Acknowledgements.

I am indebted to Dr. E. Sydney Morris, Director-General of Public Health for New South Wales, and to Dr. H. W. Palmer, medical superintendent of Waterfall Sanatorium, for permission to publish this paper.

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THE USE OF "METAPHEN" IN THE TREATMENT OF PYOTHORAX AND PYOPNEUMOTHORAX.

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PYOTHORAX and pyopneumothorax are among the conditions most dreaded by chest physicians. They may occur in apparently healthy persons on account of spontaneous pneumothorax, with no evidence either then or later of tuberculous disease. They very frequently complicate the course of an artificial

pneumothorax, especially when they are incomplete or when adhesions are present together with superficial cavities; or they may be associated with tuberculosis of the lung, in which the pus may contain tubercle bacilli. We thus have to deal with purely tuberculous cases on the one hand and tuberculosis *plus* secondary infection on the other. And lastly we may have to deal with sepsis from the beginning, associated with pleural fistulæ, lung abscess or bronchiectasis.

Treatment aims at: (i) efficient and persistent drainage of the pleural cavity; (ii) cleanliness and sterilization of the pleural cavity, if these can be secured; (iii) later, obliteration of the cavity, either by expansion of the lung when this is desirable and attainable, or, more frequently in practice, by collapse of the chest wall by means of some surgical procedure.

The pleural cavity may be washed out by copious irrigations with various fluids, ranging from normal saline solution to Dakin's solution, and solutions of dyes such as methylene blue or brilliant green after aspiration of the pus, or rather, at the same time as aspiration. Various modifying fluids and antiseptics have been advocated, such as gomenol oil (2% to 5% in olive oil). In our hands "Titrol" (obtained from Australian ti-tree, *Melaleuca alternifolia*) in a 5% solution in oil has proved useful; but oily solutions have the disadvantage of floating on top of the residual pus, and while liquefying it to some extent, are not truly emulsified with the pus. They are feebly antiseptic and have little effect in reducing the numbers of bacterial invaders. One of us (J.B.F.) in 1932 noted the use by M. Jacobs[1] at the Eagleville Sanatorium, Pennsylvania, of a substance called "Metaphen". Jacobs advocated the instillation of this substance in a strength of 1 in 5,000 in olive oil, in amounts of five to ten cubic centimetres into each lung after preliminary induction of anæsthesia in the trachea and larynx by 4% cocaine solution. He stated that in over 100 treatments in inoperable cases of pulmonary cavitation no untoward effects were noted, and considerable benefit ensued.

Raiziss[2] describes his compound "Metaphen" as "a new organic mercuri-cresol compound" (4-nitro-3, 5-bisacetoxy-mercuri-2-cresol). It has been used in irrigating nasal cavities and the urethra without harmful effect, and is declared by the makers to be from 250 to 1,500 times more powerfully germicidal than phenol, according to the pathological organism tested. Here at last appeared to be a useful weapon which might be used with good effect in pyopneumothorax. Supplies were not obtainable in Australia at that time; but in response to a letter, the Abbott Laboratories Limited, of North Chicago, Illinois, sent a generous supply, which was first used in the State sanatoria and at the Melbourne Hospital.

In the first cases "Metaphen-in-Oil" (1 in 5,000) was used, from 10 to 40 cubic centimetres being injected after aspiration of the pus.

At Heatherton Sanatorium one of us (H.W.) had been using gelatin and acriflavine on the lines advocated by Robert Hunter[3] and J. Crockett,[4] of the Bridge of Weir Sanatorium, Scotland. He (H.W.) initiated the use of "Metaphen" and gelatin in saline solution in a case with broncho-pleural fistula, and obtained good results in this and subsequent cases of pyopneumothorax. Moreover, the pleura was not irritated by "Metaphen" as it was by gomenol, "Titrol", acriflavine *et cetera*. Acriflavine, moreover, produced nodules in the needle track, probably due to proliferation of cells. "Metaphen" proved so much superior to other antiseptics that it has been adopted widely in our tuberculosis institutions in Victoria. Further support for this opinion was provided by work on these lines of Rudman and Ellison,[5] although these workers used an oily solution only.

At the Austin Hospital an experimental and clinical investigation into the efficacy of "Metaphen" as a bactericide and liquefying agent was carried out by one of us (A.H.P.). An experiment *in vitro* was performed on an emulsion of bovine tubercle bacilli in normal saline solution, to two equal quantities of which were added acriflavine solution (1 in 5,000) and "Metaphen" solution (1 in 10,000) respectively. Smears from these emulsions were made on Dorset's egg media after 24, 48 and 72 hours, and the cultures were incubated for six weeks. At the expiration of this time a free growth of tubercle bacilli was found on those media inoculated from the acriflavine tubes; but those inoculated from the "Metaphen" tubes after 72 hours showed a few colonies of organisms only. This observation suggested that "Metaphen" was at least bacteriostatic to tubercle bacilli in a dilution of 1 in 10,000. A further experiment *in vitro* was performed on two specimens of sputum taken from the same patient at the same time. One specimen of sputum was incubated without previous treatment, while to the second were added a few drops of a 1 in 500 aqueous solution of "Metaphen". After incubation for 24 hours the material in the first untreated flask was extremely foul-smelling and still contained floccules of material, while inoculation of blood agar produced a profuse growth of an enormous variety of organisms. On the other hand, the treated flask, after incubation for 24 hours, contained a thin inodorous fluid, from which no growth of organisms on blood agar could be produced in seven days. This further experiment suggests that "Metaphen" is efficacious in reducing the growth of and perhaps in killing saprophytic organisms in purulent material, while it also acts as a liquefying agent.

Such experimental work supported extension of the trial to cases of secondarily infected empyemata. The form of "Metaphen" used was a 1 in 5,000 solution in normal saline solution, to which gelatin in a concentration of 2% had been added. This was employed as a replacement medium after aspiration of the purulent material. By repeated plating of the aspirated material on blood agar an attempt was made to determine the efficacy of the treatment in reducing secondary infection. The

experiments were not completely satisfactory, owing to technical difficulties in the laboratory and the pressure of routine work; but in all the cases treated (13) the foul odour of the pus was overcome and the flora were found to be considerably reduced in number and variety. Four patients died while undergoing treatment. In the remaining cases the pus became sterile after intervals of from six to twelve weeks. It is of interest to report that in each of the fatal cases death was due to a general dissemination of the tuberculous disease. When a bronchopleural fistula was known to be present, pleural lavage was strictly avoided, as it was recognized that such a procedure would assist in the perpetuation of the fistula. By using "Metaphen" in this way it has been made possible to treat several patients with secondarily infected tuberculous empyema as those with a pure tuberculous infection, after first overcoming the pyogenic element.

In preparation of the gelatin base sheet gelatin is used, not the nutrient gelatin of laboratory use. It is autoclaved three times to obviate any risk of tetanus infection. It is then supplied in sterile bottles, mixed with concentrated saline solution, of such strength that 10 cubic centimetres when diluted with distilled water to 150 cubic centimetres (five ounces) make a solution of 2% gelatin in normal saline solution. To this are added 60 cubic centimetres (four drachms) of aqueous "Metaphen" (1 in 500) solution, giving 150 cubic centimetres (five ounces) of the "Metaphen" and gelatin solution of an approximate strength of 1 in 5,000. This solution is used as the replacement medium after aspiration of the fibrinous exudate or pus. We have used quantities of from 10 cubic centimetres to 200 cubic centimetres. The procedure is repeated at intervals of five to seven days until the pus is thin and sterile and does not collect afresh. The concentrate received from the laboratory keeps indefinitely, and the made-up solution remains fluid at body temperature.

These methods should be carried out for from a few weeks to a few months, and should be augmented in suitable cases by some system of continuous suction drainage when the pus becomes fluid.

Our series of patients treated by the above method was small, namely, 34. Of these, 22 recovered and 12 died.

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PERURETHRAL RESECTION IN BLADDER NECK OBSTRUCTIONS.

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Historical Review.

IF we look back through the ages, medical historical records show us that many old men have been cursed at all periods by the really terrible condition of acute retention of urine. Such emergencies were dealt with, from time immemorial, by some form of catheter, often crude, but at certain epochs made very smooth and of excellent finish.

Not until the end of the nineteenth century was any attempt made to remove or incise the obstructing tissue, and in this connexion it is curious to see history repeating itself nowadays by the introduction of perurethral resection, for the first surgical attempts by Mercier, Civiale and Bottini were by the perurethral route. At the very beginning of the twentieth century prostatectomy was born, and about three decades later perurethral removal of obstructive tissue appears again, foreshadowed by the diathermic "forage" of Luys in Paris, and the cold steel punch of Hugh Hampton Young of Baltimore.

Development of Perurethral Resection.

Visual loop resection by a high-frequency cutting modality was introduced by Maximilian Stern in the United States of America in 1926, though it was not taken up generally by urologists in that country until 1932, and in Australia until 1933.

In the Mayo Clinic an early and remarkably quick displacement of prostatectomy took place. In 1929 10% of patients with obstructive disease of the bladder neck were treated perurethrally; in 1930 about 15% were so treated; in 1931 about 40%; in 1932 about 90%; while in 1933 prostatectomy was almost completely displaced. This is a perfectly amazing state of affairs, and as we watched the developments from Australia, we were justifiably astounded, and, it must be admitted, incredulous to some degree. From the reports which reached us later in special journals it became apparent that what might have applied to the Mayo Clinic certainly did not apply to the average urologist in the United States of America. Americans believe in advertising, so the instrument salesmen pushed resectoscopes diligently. The public heard of a new "non-cutting" operation and demanded it; to cap all, practitioners without urological experience took up this so-called "minor" operation. The mortality must have been frightful. The first bombshell was thrown when, in October, 1933, a competent urologist named N. G. Alcock gave an extremely

frank statement of his results, comparing 400 consecutive cases of prostatectomy with 400 consecutive perurethral resections. The mortality accompanying his process of gaining experience seems to us not only amazing, but quite unjustified. In the first 50 cases it was 24%; by the time he had completed 100 cases it had certainly dropped to 15% (not yet a benign figure); however, in his last 275 cases there were only two deaths. His mortality rate in the 400 prostatectomies was 9%.

Alcock stunned the meeting into stupefied silence by his frankness, and he must be congratulated on his courage in admitting such an astounding mortality in his earlier cases, though we feel that his later competence should have been gained by confining resection at first to small obstructions.

The attitude of urologists here and in Britain was that one should continue with prostatectomy and try out the new procedure in cases of *prostatisme sans prostate*, carcinomatous obstruction and very small adenomatous hyperplasias. By adopting this careful procedure from the start, with very few exceptions, we managed to secure happy results, in that the functional outcome was satisfactory in an overwhelming majority of cases, while only one death resulted. The latter occurred very early, being the fourth case of the series; the patient was very old and had disorganized kidneys. Suprapubic prostatectomy has been continued as a routine measure for all large adenomatous hyperplasias; but we must state that as the years have gone on and facility with the resectoscope has increased, medium-sized adenomatous hyperplasias have been attacked. In a very few cases large adenomata have been treated endoscopically, sometimes with failure, necessitating subsequent prostatectomy. Strangely enough, in a few desperate cases of retention, complicating such illnesses as coronary occlusion, cerebral hæmorrhage and the like, we were fortunate enough to be able to conquer the annoying retention by resection. Nevertheless, we still consider that for larger hyperplasias suprapubic prostatectomy is preferable, especially since its present state is one of comparative safety and great efficiency as an exact surgical procedure. This condition of affairs is one which is due in great measure to our late lamented colleague, Harry Harris. It is somewhat unfortunate, so far as the United States of America are concerned, that real interest in the Harris suprapubic technique was only beginning to awaken when perurethral resection came along and swept all before it. Had the Harris technique been possessed widely by urologists in the United States of America, we doubt if there would have been such a wholesale discarding of suprapubic prostatectomy, with consequent mass of unhappy results.

In Australia, however, possessing a sound and safe open-bladder technique, we have come to look on this operation as a relatively benign procedure, and therefore do not actively seek to avoid it. Considering the relative safety of the suprapubic operation with hæmostasis by suture, our present attitude is that the open operation should be advised where resection is likely to be a long, arduous or oft-repeated procedure.

We publish a parallel series of suprapubic prostatectomies carried out over the same period as the perurethral resection series, namely, from the middle of 1933 to the end of 1937. It will be seen that prostatectomy has been performed in a greater number of cases than resection, which in itself witnesses to the conservatism we have exercised. As facility in technique progresses, however, the proportion of resections rises, and during the next few years we expect the number of resections to exceed that of the prostatectomies.

Apart from improvement in technique, the greatest factor which will in future allow expansion of application of the perurethral method is early diagnosis, and this point we now desire to stress.

Early Diagnosis.

The classical symptom of increased frequency of urination, usually first brought to the notice of the patient by unaccustomed rising at night, may not be in evidence, or only slightly so, while the disease, adenoma or carcinoma, is progressing. In some cases a sudden acute retention may be the first symptom of note. It is certainly commoner, however, for increased frequency to characterize the progress of adenoma, while increased difficulty is the outstanding symptom of carcinoma of the prostate.

All obstructive bladder-neck lesions have their beginnings, but in the past the profession generally has disregarded the importance of the early stages of these conditions, since no real attempt has been made to study early symptomatology. It is now suggested to the profession that the commonest early symptom is restriction of the stream, both as to force and diameter. The patient rarely complains of this symptom spontaneously, and in the majority of cases it will have to be elicited by careful questioning.

In the new edition of Thomson Walker's textbook on genito-urinary surgery we read:

> Enlargement of the prostate may be latent for several years until it has reached a large size, and complete retention may occur. Usually, however, symptoms commence gradually, the first being those of vesical irritation.

Apparently the significance of restriction of the stream as the earliest symptom is not recognized.

Likewise, in Deaver's important monograph, "Enlargement of the Prostate", we read: "Some alteration in the urinary function is almost invariably the earliest change to be observed, and usually consists in increased frequency of micturition." It is a matter of common observation that patients do not complain of minor symptoms unless inconvenienced by them. Knowledge of the significance of very early symptoms is best disseminated by the man in general practice. With a growing awareness in the minds of the public and cooperation from the general practitioner we can hope in future to see most cases of bladder-neck obstruction in the early stages.

Restriction of the Urinary Stream.

We shall now discuss the early symptom of restriction of the stream under two headings: the force of the stream and the diameter of the stream.

Force of the Stream.—Memory fades relatively or completely in many people; but we have found in questioning patients with prostatism that in nearly every case the patient feels sure that the stream lacks the force it possessed, let us say, in his twenties or thirties. Men with more retentive memories can easily recall their schoolday prowess in projecting the stream. The very old man no doubt loses tone in all muscles, including the vesical detrusor, but here we are concerned with recognizing the symptoms of prostatism early, in the forties or fifties preferably, and the normal loss of force in the stream should be of slight degree only in these decades of life.

Diameter of the Stream.—Similar remarks apply to the question of diameter or calibre of the urinary stream. The question should be carefully put so that the patient understands it thoroughly. The patient is particularly asked to judge relatively, comparing the present diameter with that of his more youthful days.

Some men declare that, so far back as they can remember, the force and diameter of the stream have always been restricted compared with the normal, which they computed by observing the stream produced by other boys, youths or men. There is little doubt that in some of these cases a degree of congenital obstruction has always existed, and it is very illuminating to observe the patient's surprise and delight at the forceful and wide stream he acquires after endoscopic resection, even though two or three strips only may have been removed from a small non-prostatic obstruction.

In this place we do not wish to labour the point we have brought up, or to discuss other facts associated with restriction of the stream, such as increased time taken to complete the act of urination, dribbling at the end of the act and so on. We desire to state, however, that it is our opinion that definite frequency or frank difficulty in urination must no longer be considered as early symptoms of prostatism. We therefore reiterate the importance of regarding deviation from the normal force and diameter of the stream as of the utmost significance in early symptomatology.

Adult male members of the public realize that prostatic enlargement occurs commonly in old men, and they call it "the old man's disease". We suggest that before many more years have passed, prostatism generally will be looked on as a middle-aged man's disease to be treated early by a safe endoscopic procedure.

Selection of Cases.

At present quite a large proportion of bladder-neck obstructions requiring treatment are of a rather large adenomatous variety, more suitable, in our opinion, for prostatectomy. Practically all other groups of bladder-neck obstruction are safely and satisfactorily treated by perurethral resection.

The final decision is made after examination with the cystourethroscope or the panendoscope. When the urine is clear and there is little or no residual urine, this examination can be made at once. Otherwise it is deferred until urinary infection is reduced or removed by retained catheter, antiseptic irrigations and orally administered antiseptics. In this way false appearances of obstruction caused by inflammatory congestion are obviated to a large extent.

An adenoma which extends far into the bladder under the trigone so as to approach the ureteric orifices is best treated by open operation. Likewise, when large lateral lobes, or a very large middle lobe, cause undue expansion of the postcollicular portion of the urethra, endoscopic resection is best avoided. As a rule, if the length of the postcollicular part of the urethra is more than about five centimetres, resection will have to be unduly prolonged, so that prostatectomy is preferable.

In the series of cases under review in this paper approximately one-fifth of the non-malignant obstructive lesions fall into the category of *prostatisme sans prostate*. It is well recognized nowadays that the classical type of adenomatous hypertrophy of the prostate is easily palpable *per rectum*, though the commonest form of bladder-neck obstruction is far from being the only one.

French urologists have clearly described the group of conditions included under the denomination *prostatisme sans prostate*, a phrase which implies absence of hyperplasia of any part of the prostate gland itself. In 1933 G. Marion, of Paris, reviewed this group and found from a unique experience of suprapubic "ablation of the bladder neck" by a special technique that a few cases were congenital and became obvious in quite small children, but most were acquired. The acquired group could be divided into: (i) muscular hyperplasia; (ii) inflammatory infiltration of the internal sphincter sometimes leading to ultimate fibrotic replacement; (iii) glandular hyperplasia affecting the subcervical group of submucous glands; and finally (iv) connective tissue hyperplasia, commonly found in many of the so-called median vesical bars. More recently Marion has drawn attention to a condition of persistent hypertonicity of the internal sphincter, probably of neurogenic origin, and capable of causing severe degrees of obstruction.

Practically without exception an excellent result can be achieved by perurethral resection in all the above groups comprising *prostatisme sans prostate*.

In the ordinary adenomatous hyperplasias of the prostate gland itself, provided the special exceptions mentioned above are respected, perurethral resection gives entirely satisfactory results.

In carcinoma of the prostate one should not wait for retention before relieving the patient of his obstruction. Perurethral resection should be carried out when definite difficulty in urination is present.

The disease is one of slow progress, and apparently that progress is not accelerated by the electric removal of tissue endoscopically.[1] Indeed, in this group the new operation is an unqualified blessing; for now one hardly ever sees a patient wearing a permanent suprapubic drainage apparatus to avoid obstruction to the urinary flow in prostatic carcinoma.

Preparation for Resection.

In general, the same careful preparation should be carried out for endoscopic resection as for prostatectomy. As a rule drainage and irrigation through an indwelling catheter are the principal local preparation, but in this series of 261 cases preliminary cystostomy had to be established in 14. The urine should be clear, or almost so, to the naked eye, and the total renal efficiency adequate before resection is attempted.

Technique.

Our experience is solely with the Stern-McCarthy lens resectoscope with cutting loop. In nearly all cases the cutting and coagulation currents were supplied by a spark-gap instrument made in Australia, which gives excellent clean cuts with the loop, and by a simple switchover to the coagulating current effects adequate hæmostasis by touching spurters lightly with the bottom of the same loop.

It is unnecessary in this article to give a very detailed account of technique; but the main principle followed is to keep on cutting strips of tissue in one location only until no more depth of cutting in that particular place is required. During this time the constant stream of hot irrigation keeps the field perfectly free of blood. So soon as the required depth is reached, hæmostasis is effected. Then one's attention is turned to a neighbouring portion of obstructing tissue, and the same process is repeated there. One should above all avoid cutting at random in different portions of the bladder neck.

As a rule the initial cutting is done in the middle line on the floor or rectal side, commencing a little proximal to the crest of the middle lobe, posterior commissure or median bar, that is, about half-way down the vesical declivity of the swelling. The groove or gutter so formed is deepened until it is flush with the general trigonal surface. Care must be taken not to cut at all into the trigone itself in a position where no hypertrophied tissue exists. In cases of small median bar and the like, it is important to distinguish the lesion one intends to attack from the interureteric bar. The latter should not be cut through, since just behind and for a little way in front of it the bladder wall is very thin and the extravesical cellular space is easily opened up, a proceeding likely to be followed by spreading infection.

Median gutter formation will have to be continued by the removal of another series of strips, if necessary, from the floor of the urethra as far distally as the *colliculus seminalis*, but stopping just short of it. This is of extreme importance, since the wall of the urethra is thin just distal to the colliculus, and the extraurethral cellular space can easily be opened up by the loop. Moreover, incontinence or damage to the external sphincter muscle may occur if we cut distal to the colliculus.

Where any great overgrowth of the lateral lobes is present, one or both lobes may fall down and partially obstruct vision when the median gutter is first made in the bladder neck. In such an event one should abandon temporarily the formation of the median gutter and ream away the neighbouring portion of one lateral lobe until visual clearance is made. After this one resumes formation of the median gutter. In most cases, however, after completion of the median channel one broadens it on one side and then on the other, thus gradually cutting on the lateral lobes, if present. The longitudinal extent of removal of strips from the lateral lobes corresponds roughly to that of the median gutter first made.

It is important to note whether undercutting of the lateral lobes is followed by collapse of the remaining upper portions, with consequent risk of obstruction. In such a case more tissue must be removed, either at once or at a second session a week or so later.

It is not so much the total amount of tissue removed as the places from which it is removed which really counts in this operation. The obstructing tissue should first be clearly defined and then removed with certainty.

In a total number of 261 endoscopic resections the procedure had to be performed at two sessions in eleven cases and at three sessions in two cases.

After-Treatment.

After operation a rubber catheter of calibre 21 (French), with a "whistle" tip and one lateral eye, is tied in. Where the urine is not infected and clears of blood-staining rapidly the catheter may be removed in three or four days. As a rule seven days are sufficient in the more difficult cases. The bladder is irrigated at intervals, the length of which depends on the degree of infection or hæmorrhage.

When the surgeon has decided to perform the operation deliberately at two sessions, the second session is carried out seven, or at the most ten, days after the first. Otherwise the patient is allowed to urinate after the catheter is removed. He is kept in hospital for several days longer so that a catheter may be passed once a day to test for residual urine and so that antiseptic irrigation may be given. In quite successful cases an ounce or two of residual urine may be found at first. This diminishes gradually until no residual urine or only an inconsiderable amount is left.

The patient is therefore in hospital after resection for about seven days in easy cases, ten days in the average case, and fourteen days in more difficult cases. When two sessions are necessary, the second operation taking place seven days after the first,

[1] Nevertheless there are two cases in our series in which growth of the tumour after resection was so rapid that death resulted in about six months.

the patient's total stay in hospital after the first resection is only from fourteen to seventeen days, since the catheter can usually be removed earlier after a second session than after a single session operation.

When one contemplates beforehand the possibility of taking more than two sessions to remove obstructive tissue, the patient should be told of this and be given the choice of an open operation, unless his general condition is such that repeated small resections are safer than one major operation.

Urinary antiseptics by mouth are given when the patient's digestive functions are in order, and are continued for a week or two after his leaving hospital.

Results.

In the period of four and a half years under review, a total of 261 patients suffering from obstruction at the neck of the bladder were treated by perurethral resection. In the same period 317 suprapubic prostatectomies were performed. The comparatively large number of prostatectomies is explained by the conservative attitude we took to resection in order to maintain safety with the new method while we were mastering its technique.

After the fourth operation in the resection series, the patient, aged seventy-seven years, who had severely disorganized kidneys, died of uræmia, although only a very small amount of tissue had been removed. From then on the succeeding 257 cases of resection were carried through without a death. The mortality rate for the whole resection series is 0·38%. In the suprapubic prostatectomy series there were fourteen deaths, a mortality rate of 4·41%.

We attribute the comparatively low rate of mortality in the resection series to several factors: (*a*) since a new method with an unusual technique was being attempted, large prostatic adenomata were only rarely attacked perurethrally, and therefore it was seldom necessary to perform protracted endoscopic resection; (*b*) where a comparatively large amount of tissue had to be removed the resection was planned in two or more sessions, so that the stress and strain were distributed, and therefore the danger of the operation was diminished; (*c*) the average candidate for resection was in somewhat better physical condition, and had less infected urine and a better renal function than the average patient requiring prostatectomy.

On the other hand, some credit must be given to the perurethral method on the score of absolute as well as relative safety; for some patients showed great degrees of renal insufficiency as well as infection, and needed prolonged drainage by catheter, or even by cystostomy, to complete their preparation. In spite of such difficulties the method proved to be safe.

Our mortality rate in all the prostatectomy series is, even according to the most exacting modern standards, quite low; so that even now that we possess some degree of proficiency in perurethral technique, we still prefer to use suprapubic prostatectomy in the treatment of patients with fairly large or very large adenomata. We reiterate, however, that the need for prostatectomy will be diminished greatly in future if early symptomatology is studied and early diagnosis and treatment are instituted.

In four cases slight secondary hæmorrhage occurred. Light coagulation of a small spurting artery through the resectoscope stopped the bleeding easily and promptly, and there was no recurrence.

Resection was impossible in a few cases on account of impossibility of introducing the resectoscope through a rigid and narrowed urethra. In one recent case of carcinoma, however, when this trouble was encountered, the bladder was opened, portion of the floor of the internal meatus was scooped out with an electric cutting loop, and the posterior urethra was well dilated from above. The bladder was sutured and a urethral catheter was left in for a week, when perurethral resection was performed, giving relief to the patient from his retention. In seven cases resection failed to relieve the patient and had to be followed by prostatectomy. These patients all had prostatic adenomata of rather large size.

Ten patients returned for a second resection, owing to recurrence of symptoms. These patients were all suffering from carcinoma with the exception of one, who had large adenomata, and one who had recurring heaped-up delayed radium necrosis at the internal meatus, following radium needling of the prostate *per perineum*. All patients were finally relieved of their difficulty of retention.

Of the 261 cases in which resection was performed, adenomatous hyperplasia was found in 119, the various forms of *prostatisme sans prostate* in 79 and carcinoma in 63. The proportion of *prostatisme sans prostate* seems very high; but it must be remembered that 317 suprapubic prostatectomies were performed during the same period, and these were all for adenoma of the prostate. Therefore, of all non-malignant bladder-neck obstructions, the group *prostatisme sans prostate* comprises about one-fifth.

Remote Results.

We know too little of the remote results to be able to state yet whether later resections may be required in any considerable proportion of cases. In other words, we do not know definitely to what extent perurethral resection may be considered as prophylactic in regard to future obstruction. We do know, however, that patients have been observed commonly up to five years and occasionally longer and that relapse has been very rare.

In this connexion it is of the utmost importance when discharging a patient from treatment, whether the lesion is innocent or malignant, to instruct him to report again if any definite restriction of the stream recurs. No patient should be discharged until this injunction has been repeated with emphasis several times in order to impress him with the necessity of obeying it.

Conclusions.

1. Perurethral endoscopic electric resection of obstructive lesions at the bladder neck is an eminently safe procedure provided no attempt is made to include moderately large or very large adenomata in its scope. Unsuitable also are (*a*) cases in which lateral lobes are very large or thick and a resection is likely to be very protracted or often repeated in order to secure good clearance, and (*b*) cases in which the middle lobe is very large.
2. Special attention should be paid in future to restriction of the stream in regard to its force and diameter as the earliest symptom of all forms of prostatism.
3. Where symptoms are present, even though no rectal enlargement of the prostate is felt or no residual urine determined, the patient should be given the benefit of a simple endoscopic examination in order to decide whether treatment is required or not.
4. Indispensable for a safe outcome is adequate preparation of the patient, especially in regard to infection of the urinary tract and renal efficiency.
5. General urological experience and particularly a knowledge of endoscopic conditions and difficulties all contribute to render this new operation a safe one.

CERTAIN ASPECTS OF KETOSIS AND ACIDOSIS.[1]

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IN this brief communication we propose to confine our remarks to the conditions of acidosis and ketosis. In the past considerable confusion has arisen from the indiscriminate use of the terms "acidosis", "acidæmia" and "ketosis". Accordingly, it may not be out of place briefly, but concisely, to define the above terms in the sense in which we have employed them in this work.

Normally the reaction of the blood is maintained within very narrow limits, and any great change is incompatible with life. Should the reaction of the blood change in any degree to the acid side of its normal reaction, a condition of acidæmia is present. Harrison has pointed out that from the clinical standpoint this does not occur unless the patient is gravely ill or practically moribund. He also emphasizes the point that it is for this reason useless to suppose that estimations of the hydrogen ion concentration of the blood will give any useful information in different pathological conditions, at any rate from the standpoint of diagnosis.

Acidosis.

You will remember that the chief mechanism for the maintenance of the blood reaction is the relationship of carbonic acid to bicarbonate. Normally the following ratio exists: $\frac{H_2CO_3}{NaHCO_3} = \frac{1}{19}$. It is not the actual quantities of each component of this system that are important, but their relative concentrations. Provided that both are proportionately increased or decreased, the reaction of the blood is maintained. In the case of a strongly ionized acid, such as lactic acid, arising during muscular exercise, there would be a tendency to acidæmia. However, in the presence of a stronger acid than carbonic acid, the bicarbonate acts as a neutralizing agent and gives rise to the weakly ionized carbonic acid. Thus:

$$HL \text{ (lactic acid)} + NaHCO_3 = H_2CO_3 + NaL.$$

The net result of this reaction is that the ratio of bicarbonate to carbonic acid is disturbed, the former being decreased whilst the latter is increased. The organism responds by increased pulmonary ventilation, thus eliminating carbon dioxide until the ratio of H_2CO_3 (1) to $NaHCO_3$ (19) is restored. It is still common to find that text-books define acidosis as a diminution of the alkali reserve (plasma bicarbonate). One of the best discussions on this subject is to be found in "Chemical Methods in Clinical Medicine", by Harrison.[1] He defines acidosis as a condition in which, owing to alterations in the distribution of acid radicals relative to basic radicals, there is a tendency to acidæmia. Harrison also points out that the definition of acidosis as a decrease of the alkali reserve should be abandoned, since a lowered alkali reserve may be present in alkalosis. Thus in oxygen lack, say in cardiac disease or in rarefied atmospheres, the increased pulmonary ventilation washes out carbon dioxide from the blood and leaves a relative excess of bicarbonate. To restore the normal ratio of carbon dioxide to bicarbonate the body excretes bicarbonate. By ordinary standards the decrease in bicarbonate would be taken as a sign of acidosis; but a moment's reflection will show that this is by no means the case.

Ketosis.

Ketosis is defined as a condition in which there is an abnormal accumulation of ketone bodies in the tissue fluids and urine. The terms "ketonuria" and "ketonæmia" are self-explanatory. This definition does not in any way suggest what the reaction of the blood or urine is, and it is important to remember that ketonuria may be associated with a urine giving a neutral, alkaline or acid reaction. Similar remarks apply to the reaction of the blood when ketonæmia is present.

Although ketosis is usually thought of in connexion with *diabetes mellitus*, it must be remembered that from the clinical standpoint ketosis will occur whenever the ratio of antiketogenic to ketogenic substances departs from the optimum value. The uncontrolled diabetic with a high blood sugar content will develop ketosis because, owing to the lack of insulin, glucose cannot be oxidized and

[1] Read by Dr. A. B. Corkill at a meeting of the Alfred Hospital Clinical Society on February 22, 1938.

promote the complete combustion of fats. Ketosis may be readily induced in a perfectly normal individual by the deprivation of food or by a high fat diet. Although the time taken to provoke ketosis varies in different individuals and also depends on the previous diet, it is found that an individual on an average diet will develop ketosis within thirty-six hours. Slight ketosis may be present after twenty-four hours' starvation; but from then onwards the ketone bodies rapidly increase in the urine. Aceto-acetic acid is known to exist in two forms, namely:

Hurtley has suggested that the danger of ketosis is not so much from the acidic nature of aceto-acetic acid as from the toxic nature of the unsaturated isomer with the enolic grouping. It is believed that normally this form is detoxicated by the liver. It is well known that the detoxicating power of the liver is to a considerable extent dependent on its glycogen content. Thus in an uncontrolled diabetic the glycogen reserves of the liver are depleted and, therefore, its detoxicating powers are decreased. It follows that ketosis in such a patient is apt to be more serious than an equal degree of ketosis in a normal person. In the latter there is no danger from the toxic effects of the poisonous isomer of aceto-acetic acid, but in the case of the uncontrolled diabetic the detoxicating powers of the liver are diminished and the outlook is more serious. Again, since anæsthetics are known to depress the detoxicating functions of the liver, it follows that post-anæsthetic ketosis should, if possible, be prevented.

In passing, it is interesting to note that the administration of excessive amounts of alkali may produce ketosis.[2][3] Haldane considers that this type of ketosis is due to the fact that the alkalosis has inhibited the capacity of the organism to oxidize glucose. These facts are of importance and should be borne in mind when for any reason intensive alkali treatment is being carried out. Unless this phenomenon is appreciated, the clinician is apt to be puzzled and misled by the appearance of ketosis during treatment with alkali.

Treatment of Ketosis.

As regards the treatment of ketosis, we no longer rely on the administration of bicarbonate. For diabetic ketosis insulin is the ideal agent, whilst in non-diabetic ketosis glucose usually suffices. Van Slyke says:

> . . . to employ alkali alone to combat ketosis or to continue alkali therapy after the bicarbonate of the blood has returned to normal is ill-advised. There is little ground to believe that alkali increases carbohydrate utilization.

Ketosis and Glucose Tolerance.

It is a well-known clinical fact that patients with ketosis usually have decreased glucose tolerance. This is true both for diabetic and non-diabetic persons. If we take a perfectly normal person and deprive him of carbohydrate for, say, forty-eight hours, it will be found that at this stage a glucose tolerance curve is definitely of the diabetic type. In Chart I this phenomenon is shown. Curve *A* is the blood sugar response to the oral administration of 50 grammes of glucose. Food had been withheld for twelve hours before the test. Curve *B* shows the same test after forty-eight hours' starvation. At the time when test *A* was carried out the total acetone bodies in the blood were 4·5 milligrammes per 100 cubic centimetres. After forty-eight hours' starvation this value increased to 14·4 milligrammes per 100 cubic centimetres. Various theories have been advanced to explain this type of decreased glucose tolerance; but it does not appear at all certain that the presence of ketone bodies is responsible for this phenomenon.

Chart No I

The effect of ketosis on glucose tolerance

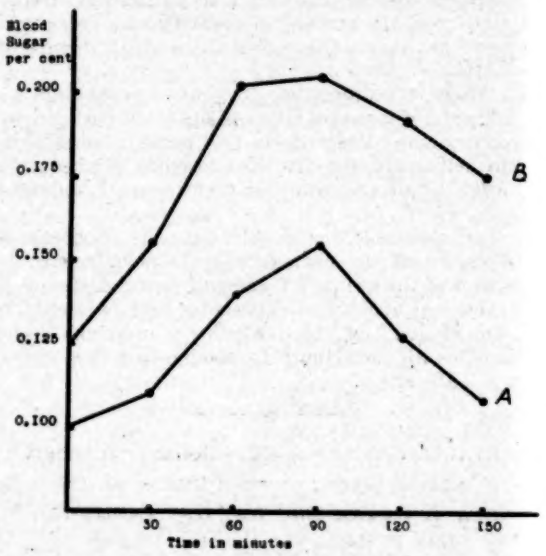

CHART I.

The blood sugar response to 50 grammes of orally administered glucose. *A*: After twenty-four hours' fast. *B*: After forty-eight hours' fast.

In order to test whether the ketone bodies could directly inhibit glucose utilization, an experiment on the following lines was carried out. The blood sugar response of an adult rabbit to the oral administration of 2·5 grammes of glucose was determined under two sets of conditions: (i) during the intravenous infusion of normal saline solution, and (ii) during the infusion of sodium aceto-acetate solution. The sodium aceto-acetate solution contained 46 milligrammes of aceto-acetate per cubic centimetre and was infused at the rate of one cubic centimetre in ten minutes. The normal saline solution was infused at the same rate, and in both tests

the infusion was commenced thirty minutes before the administration of glucose and maintained during the course of the experiment. About ten days elapsed between the test with normal saline solution and that with aceto-acetate. In the test with aceto-acetate the blood acetone bodies were found to be 3·9 milligrammes per 100 cubic centimetres before the infusion and 17·8 milligrammes per 100 cubic centimetres at the end of the experiment.

TABLE I.
The Blood Sugar Response of an Adult Rabbit to 2·5 Grammes of Orally Administered Glucose.

During the Infusion of Normal Saline Solution.		During the Infusion of Sodium Aceto-Acetate.	
Time in Minutes After Glucose.	Blood Sugar Percentage.	Time in Minutes After Glucose.	Blood Sugar Percentage.
0	0·090	0	0·101
30	0·129	30	0·133
60	0·143	60	0·149
90	0·140	90	0·138
120	0·130	120	0·132
150	0·124	150	0·124

The results of this experiment are illustrative of what was found in several similar investigations, and serve to show that the ketone bodies do not directly interfere with carbohydrate utilization. How, then, are we to explain the diminished glucose tolerance that is found in a patient deprived of carbohydrate? Some light is thrown on the problem by a consideration of Houssay's work on the anterior pituitary gland. From experimental results Houssay has suggested that one of the chief functions of the anterior pituitary gland is to facilitate neoglucogenesis, that is, the formation of carbohydrate from protein and fat. During starvation or even deprivation of carbohydrate only, the body is forced to produce carbohydrate from its own protein and fat; in other words, neoglucogenesis is accelerated. If this phenomenon was dependent on one of the anterior pituitary secretions we should therefore expect to find that anterior pituitary activity was increased. It has already been shown that, amongst other principles, the anterior pituitary contains one that regulates carbohydrate metabolism and which, if given in excess, inhibits insulin action. It is, therefore, in the absence of other proof, reasonable to suggest that the decreased glucose tolerance found in the presence of an inadequate carbohydrate supply is dependent to some extent on over-activity of the anterior pituitary gland.

Acidosis and Anæsthesia.

Although it is generally accepted that the administration of a general anæsthetic causes a fall in the alkali reserve of the plasma, there is no unanimity of opinion as to the cause of the phenomenon. In this connexion we should like to comment on a statement appearing in "Recent Advances in Anæsthesia and Analgesia", by Hewer,[4] page 2:

> The administration of any of the lipoid soluble anæsthetics for an appreciable time . . . diminishes the alkali reserve of the blood, the greatest decrease being at the end of a long anæsthesia. The normal is rapidly regained during the recovery stage and is hastened by the administration of carbon dioxide-oxygen mixtures. If the lowering of the alkalinity of the blood be permitted experimentally to go too far, the kidneys eventually cease to function. For these reasons the administration of large quantities of sodium bicarbonate before operation was considered good practice, but recently it has been shown that the important factor is the accompanying ketosis, and much better results are obtained by giving glucose.

In many respects this statement is grossly inaccurate. First, it has been shown that the decrease in plasma bicarbonate occurs within a very short time after the commencement of anæsthesia.[5] Since ketosis, if it does occur, is usually a post-anæsthetic phenomenon, it cannot be the cause of the early decrease in plasma bicarbonate. Again, contrary to Hewer's statement, the decrease in alkali reserve is not of a progressive nature, but after an early initial fall remains fairly constant during the course of anæsthesia.

From observations on a large number of patients undergoing various surgical procedures, we feel convinced that the term "post-anæsthetic ketosis" is misleading. It implies that the anæsthetic is responsible for the ketosis, and we have failed to find any evidence to show that this is really the case. Of twenty-three patients subjected to open ether anæsthesia of varying duration, only three suffered from ketosis.

> One patient had an anæsthetic of twenty minutes' duration for dilatation of an œsophageal stricture, and for four days prior to operation had had very little to eat. She came to the operating table with an initial ketosis, and this increased after the operation. Very little food was taken for twenty-four hours after the operation, and the ketonuria persisted for thirty-six hours.

In this case the ketosis could be attributed solely to a lack of food. It has already been mentioned that on the average about thirty to thirty-six hours' starvation is required to produce ketosis in a perfectly normal individual, and we can find no evidence that the administration of an anæsthetic shortens this period. In all the cases that have been investigated, the ketosis found after the operation could be attributed to deprivation of food demanded by the dietary treatment of the patient's condition. Furthermore, we could find no correlation between ketosis and post-anæsthetic vomiting, except that the latter, if continued, would eventually lead to ketosis.

The Relation of Lactic Acid to Lowered Alkali Reserve.

According to Ronzoni *et alii*,[6] ether anæsthesia causes accumulation of lactic acid in the blood to such a degree that it accounts for the "acidosis" of anæsthesia. Long[7] considers that anæsthesia gains its effect by interfering with muscular carbohydrate metabolism. In our own experiments we thought that it would be worth while to determine the blood lactic acid content of patients under ether anæsthesia. First, we decided to determine some normal control values. The method employed for estimation of lactic acid was that described by

Friedemann and Graeser,[8] which, when previously employed by one of us (A.B.C.), gave consistent and accurate results.

In Table II the blood lactic acid values for a number of patients in the surgical wards of the Alfred Hospital are shown. All patients had been fasting for twelve hours and were well on the road to recovery after fractures. According to Van Slyke, the lactic acid content of venous blood from normal persons at rest varies from 10 to 20 milligrammes per 100 cubic centimetres. The values shown in Table II vary from 11·2 to 35·0 milligrammes per 100 cubic centimetres. At the start we were puzzled

TABLE II.
Blood Lactic Acid Values in Normal Persons.

Patient's Number.	Lactic Acid in Milligrammes per 100 Cubic Centimetres.
1	16·0
2	11·2
3	30·1
4	12·6
5	23·0
6	35·2
7	13·0
8	32·8
9	22·0
10	24·0

at the high values encountered in perfectly normal persons, but from further investigations of normal humans and laboratory animals we found the explanation. We are told that nervous excitement will raise the blood sugar content of a perfectly normal person, the probable mechanism being that, owing to the release of adrenaline, liver glycogen is mobilized to glucose. It appears that in the estimation of the blood lactic acid content, and particularly in the interpretation of the results, the nervous excitement and muscular exercise are of extreme importance. Unless these factors are taken into consideration fallacious conclusions will be drawn. From a large number of tests on laboratory animals we found that pronounced rises in blood lactic acid content would occur in response to nervous excitation. In the figures quoted in Table II there are three values above the quoted normal, namely, in patients 3, 6 and 8. Patient 3 was an extremely excitable person and very apprehensive of the taking of blood. Patient 6 had had a scalp wound and the stitches had been removed about one hour previous to the taking of blood for lactic acid estimation. Patient 8 had had his leg in plaster for three months and was to be allowed to get out of bed and walk on the morning of the lactic acid estimation. Naturally, he was very excited.

In this connexion it is interesting to note that Bokelmann asserts that the blood lactic acid content is high in pregnancy and still higher in the pregnancy toxæmias. On the other hand, Zweifel and Scheller demonstrated as much as 50 milligrammes of lactic acid per 100 cubic centimetres in the blood and cerebro-spinal fluid of eclamptic patients immediately after convulsive seizures; but this figure rapidly fell to normal after the convulsions were over. The high lactic acid value was attributed to lactic acid formation from the muscular twitchings.

From what has been said it follows that the interpretations of blood lactic acid values must be made with extreme caution. This is further emphasized by observations made on patients undergoing anæsthesia. In a number of such cases estimations were made (*a*) immediately before the administration of the anæsthetic, (*b*) at the end of the operation, and (*c*) twelve hours later. Some of these results are shown in Table III. In this table remarks concerning ketosis and post-anæsthetic vomiting are also given, in order to amplify what has been said in the previous section.

Looking at these few cases, and they represent our general findings, one is struck by the high values for lactic acid immediately before operation. In fact, some of the values are of the order reported

TABLE III.
The Blood Lactic Acid Content Before and After Anæsthesia.

Patient's Number.	Nature of Operation, Anæsthetic *et cetera*.	Blood Lactic Acid Content in Milligrammes per 100 Cubic Centimetres.		
		Before Operation.	At End of Operation.	Twelve Hours Later.
1	Operation for recurrent femoral hernia. Nitrous oxide and ether for 50 minutes. Normal breakfast at 7.30 a.m. (porridge, bread and butter, egg). Operation at 2.30 p.m. Severe vomiting on awakening; vomited four times during the night. No ketosis at any stage	45·0	15·0	20·0
2	Gastro-enterostomy. Ethylene and ether for 65 minutes. No post-anæsthetic vomiting. Taking very light diet for several days prior to operation. After operation, diet consisted of small quantities of sweetened water for 30 hours, then equal quantities of milk and water sweetened with sugar for 24 hours. Urine collected 20 hours after operation contained no ketone bodies. Specimen collected 36 hours after contained a trace of acetone..	58·9	24·3	10·8
3	Excision of small lipoma in buttock. Open ether for 20 minutes. Severe post-anæsthetic vomiting. No ketosis at any stage	32·0	15·0	18·0
4	Gastrostomy for œsophageal stricture. Open ether for one hour. Very little food for four days prior to operation. Acetone present in urine before operation and 24 hours after operation. Rothera's reaction strongly positive. No post-anæsthetic vomiting	42·0	22·0	28·0

by some workers in connexion with various pathological states. However, the interesting fact is that the estimations carried out at the end of the operation, when the patient was quiet and to some extent still under the influence of the anæsthetic, show normal values. We think that this finding definitely rules out the theory that the fall in plasma bicarbonate content is due to lactic acid accumulation. The values taken twelve hours after operation vary to some extent; in some instances in which low values were found the patients had not completely recovered from the effects of the operation and anæsthetic, and were quiescent and mentally lethargic.

There is some evidence that during anæsthesia an unknown form of organic acid accumulates in the blood and is excreted in the urine. This acid is soluble in ether and its accumulation might possibly account for the diminished alkali reserve. Some time ago Travers[9] showed that there was some relation of decrease in plasma bicarbonate to post-anæsthetic vomiting. In common with other observers, he found that the pre-operative administration of glucose was beneficial. This leads to the suggestion that this unknown form of organic acid is normally detoxicated by the liver.

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METHODS OF INDUCTION OF LABOUR.[1]

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Introduction.

INDUCTION is one of the annoyances of obstetrics; there is that slight element of unreliability which ruins what could easily be the most effective procedure in midwifery. History confirms this mistrust. Known to the ancients, induction of premature labour was given a formal standing in English obstetrics in 1756, when it was suggested as a means of avoiding the appalling mortality of Cæsarean section in those times. Taken up, dropped again, established by the advocacy of Thomas Denman, but rather ignored abroad, induction has come to occupy a useful place in our work, but with the passing of time has developed no firm place in our affections. Nor has time helped us in the choice of a method. Artificial rupture of the membranes was the original method employed; but it was displaced later by mechanical methods. The popularity of these waxes and wanes, and today, although we investigate various suggestions, it is these two which still share our favour.

In preparing this paper I have concentrated on usefulness. I propose to bring forward some general considerations, to review in some detail particular methods, and, accepting my function as opener of the discussion, to put forward some propositions for your discussion.

General Considerations.

The intrinsic value of any particular method of induction depends on its reliability, its safety and what we may term its way of escape.

Reliability.

Reliability, to my mind, is largely a question of promptness. Some delay in the response does not matter in a case of disproportion; but we are more concerned about delay in toxæmic and medical cases, and in the more acute toxæmic cases time is the essence of the contract. In the surgical methods of induction the element of infection makes the time factor very important; once twenty-four hours have elapsed infection is creeping in, and if the labour has not commenced in forty-eight hours we have real cause for uneasiness.

Safety.

The Safety of the Mother.—Ideally, the mother is brought into labour without impairment of her physical condition; but this ideal is not always attained. Deterioration of the patient's condition undoubtedly occurs as the result of induction, particularly in toxæmic cases, in which fits may develop after induction has been done. It is difficult to say whether this deterioration is due to stimulation and manipulation, or whether it is part of the natural progress of the disease; but it is a factor to be reckoned with. Anæsthesia in the toxæmic case is rather dangerous and may contribute to this aggravation, and if possible any manipulation should be performed under the influence of some narcotic, such as morphine and hyoscine or "Nembutal". Should there be any marked difficulty in carrying out surgical induction, it may be worth while to review the case rather than to persist in the manipulations.

Infection, though not a great risk, is a very real one in the surgical methods of induction, particularly in the toxæmic case. The technique of induction is never perfectly aseptic, and even the best technique cannot eliminate ascending infection; consequently we find that there is a fairly high morbidity associated with surgical induction.

[1] Read at the fifth session of the Australasian Medical Congress (British Medical Association), August, 1937.

The Safety of the Child.—The importance of the child varies. In disproportion, for example, a dead child is a tragedy, but in toxæmia merely a disappointment; in the latter case we are sufficiently concerned about the mother to make the child a secondary consideration. In connexion with the child we remember the occasional toxic action of quinine,[1][2] *intra partum* pneumonia following ascending infection after rupture of the membranes,[4] placental infection set up by the tube,[3] and mechanical disturbances by the bag on the tube. Moreover, the course of the labour may be unsatisfactory after induction, and if the membranes have been ruptured the child may be unduly compressed by the uterus.

The Line of Retreat.

The annoyance at a procedure for induction when it fails to produce a prompt result may change to grave concern as time passes and the patient does not come into labour. We have to recognize that induction is merely an attempt to start labour and that the attempt may fail, and further, that the labour following induction may be inefficient, with erratic pains and an unsatisfactory course. In either event we must have a line of retreat. If labour does not commence in forty-eight hours or so we cannot afford to be too optimistic, as the uterus has already proved itself passive. We may elect to wait and see, or withdraw from action by removing bougies or tubes, or, very occasionally, if the condition of the patient is deteriorating, perform Cæsarean section as a way of escape. I am not a pessimist over induction; but over a period of time we find that surgical induction provides some grave situations which have to be met promptly.

These general considerations are hardly open to debate; but I should welcome some views on the time factor in surgical induction. How long may the onset of labour lag without risk to the mother? Many patients after mechanical induction or artificial rupture of the membranes come into labour promptly; but a few are slow in responding. Morbidity is slight when results are prompt, and moderate if the baby is delivered by the fourth day; but after this the risk is great. My own feeling is that if the patient does not come into labour on the third day induction is becoming a menace to the patient rather than a help in her management.

Methods Employed.

We use induction rather freely at the Women's Hospital, Melbourne. Various procedures have been tried, and by medical officers of different dispositions; but by evolution and quite unsystematically the methods have settled down to the free use of medicinal stimulation and the moderate use of surgical induction. In a year, to approximately 3,500 deliveries there would be about 400 inductions, of which 80 might be surgical.

Medicinal Stimulation.

Medicinal stimulation is generally associated with the use of quinine combined with a large dose of castor oil, warm bowel wash-out or enema, and a hot bath. It is commonly reinforced by repeated doses of pituitary extract. A common routine is that popularized by Watson.[5] Series of cases have been published testifying to the method; but, the time factor being used as a measure of adequacy, it is not highly successful. Failure to produce a response in forty-eight hours provides too much uncertainty in those cases, such as marked toxæmia, in which prompt control of the situation is demanded. Quinine has been used in various forms, such as the sulphate or bihydrochloride by mouth and the bihydrochloride and a combination of quinine and calcium by injection; but injection has little, if any, advantage over oral administration, and some have even questioned the value of the quinine[6] or the pituitary extract.[7]

Quinine has a slight stigma attached to it. It has been suggested that the kidneys of the mother may be damaged; but this occurs probably only when very large doses are given. Occasionally a toxæmic patient sems to relapse under stimulative treatment; but the sequence of events in control cases would suggest that the relapse might be part of the natural history of the condition. We seem more uneasy where the baby is concerned; but Watson had apparently no qualms about quinine, although he reviewed the possible risks of pituitary extract.

Surgical Induction.

Various methods have been used at the Women's Hospital; but we restrict ourselves almost entirely to tubal induction and artificial rupture of the membranes, and in our small way we have followed history in our varying preference. In 1932 there was a phase when artificial rupture of membranes was used for many well-deliberated inductions, and during the past twelve months there has been a tendency to a revival of its use for *multiparæ*.

Induction by rectal tube has been the usual method when we have desired a definitive result. We average about sixty cases a year, and approximately three out of four are for toxæmia. One or two tubes may be inserted. Very occasionally bougies have been used instead. The hydrostatic bag has been used rather as a mechanical dilator when other methods have failed.

Artificial rupture of the membranes has been used about a quarter as frequently as the mechanical method when the primary object has been the onset of labour. It is also used in addition as a method of direct treatment in cases such as *ante partum* hæmorrhage and hydramnios; but such cases have not been included in this discussion. It has appeared to matter little whether the membranes have been ruptured low or high.

As could be anticipated, surgical induction introduces a real risk for both mother and child, a risk not greatly in evidence perhaps when induction is merely an operation of relative necessity on a healthy patient at term; but the risk is magnified

in toxæmic cases and by ascending infection when there is delay in the onset of labour, and in our cases the morbidity was about double the average for all our midwifery cases. The stillbirth rate is high, although this may be discounted by the high proportion of toxæmic cases in our series.

Other Methods.

I sometimes strip the membranes from the os, particularly as an accessory to medicinal stimulation; but reports of mishaps have deterred me from the use of injections, such as glycerin, to separate the membranes. We have tried very tentatively intra-amniotic injection of "Uroselectan" (experience of amniography shows that there is a tendency to the onset of labour after this procedure); but this method has not always proved as simple as would be expected, and the response may be casual. In a few cases we have used œstrogenic substances,[9] but with no startling success, and the expensive routine and delayed action rob the method of much of its usefulness.

Discussion of the Methods of Induction.

1. Does quinine kill the baby? This is hard to determine statistically. Dilling and Gemmell,[1] in 1929, in a review of 756 controlled cases, came to the conclusion that quinine might perhaps be responsible for a fœtal mortality of 1%, but pointed out that the total fœtal loss was no greater than in the control series. Our own experience at the Women's Hospital, Melbourne, is similar. Quinine has been used by us for a long time, and in some cases has been repeated lavishly by enthusiastic resident medical officers. We average over 400 cases a year in which medicinal stimulation is used; yet when an unexpected stillbirth occurs it is often found that no quinine has been given to the patient.

Actually I admit to some uneasiness in this matter, but even if there is a trifling stillbirth incidence directly due to medicinal stimulation, it is a small price to pay for a method which saves at least a proportion of patients from more radical interference. Even Cæsarean section is not immune from unexpected stillbirths.

2. Which is the best method of surgical induction? I have restricted myself to the insertion of a rectal tube and artificial rupture of the membranes, both of which are generally very successful. There are some uncertainty and risk with each method; rather less risk perhaps with artificial rupture of membranes, provided that there is a prompt result; but occasionally in the past a long latent period after the artificial rupture of membranes has caused us sufficient embarrassment to damp our enthusiasm. Keeping the membranes intact allows an escape with less prejudice to the mother, and partly for this reason we tend to favour the mechanical type of induction exemplified by the insertion of the tube. I should be glad to hear of any experiences with parallel series comparing the various methods.

3. Should we combine methods? Despite objections raised to the use of medicinal stimulation with surgical induction, we combine it, and I think with benefit, with the mechanical methods and as a preliminary to artificial rupture of membranes. I see no danger to the mother in the use of small repeated doses of pituitrin[10] before the patient is in labour; but if the membranes are ruptured there is a real risk to the child, a risk, however, which has to be accepted if the onset of labour is delayed. Our enthusiasm does not extend to such mechanized mass attacks as the following accelerative technique: bougies to give some softening of the cervix followed by the bag for some dilatation, then rupture of the membranes, followed by a bigger bag, the whole provoking delivery or allowing extraction within twenty-four hours. I am afraid that I dislike multiple manipulations, especially in a toxæmic case or when there is the slightest possibility of Cæsarean section, and to rupture the membranes after failure of tubal induction is to court disaster.

Failures and Disappointments.

You may think from my presentation of the subject that I am lukewarm regarding induction. I am not. Induction is a very valuable procedure, and I do not wish to detract from its value. With medicinal stimulation there is a chance of success in two cases out of three; but the method is useful only in those cases in which we are not entirely dependent on a prompt and positive result. There is a high percentage of successes in the surgical cases, but some of our successes must be qualified, and every now and again we find ourselves in a difficult position, out of which we must scramble as best we can. Failure of the patient to come into labour after attempted induction is, to say the least, disappointing; but incipient infection as the result of the attempt is disturbing as well. To lose the baby in a toxæmic case may be merely a regrettable incident, but in a case of disproportion it is a tragedy. The necessity for Cæsarean section or the development of convulsions in toxæmia means a definite failure to achieve our object, and death, no matter what the extenuating circumstances, is a disaster.

The following "disconcerting inductions" occurred in association with 24,360 deliveries spread over seven years. This aspect has been more closely followed in connexion with the mechanical inductions (mostly by tube); but artificial rupture of the membranes has also the same disconcerting tendency to leave us lamenting on occasions.

Attempted Induction by Rectal Tube (383 Cases).

Disappointments—	
Patients undelivered after four days	26
Stillbirths in toxæmic cases	63
Failures—	
Cæsarean section required	3
Stillbirths in disproportion and maturity	3
The occurrence of fits after induction	12

Deaths—

Error in diagnosis[1]	1
Induction attempted before admission	3
Induction attempted in hospital	8

Six patients suffering from sepsis at the time of death; three died undelivered on first, third and fourth day respectively.

Artificial Rupture of Membranes (about 100 Cases).

Cæsarean section necessary	2
Cæsarean hysterectomy	1
Death from infection	1

(In several instances labour was delayed for a week.)

It is fair to point out that much of this trouble may be ascribed to the abnormal condition of the patient. More than three-quarters of our surgical inductions were done for toxæmia (including nephritis and eclampsia) and only one-sixth for disproportion and maturity. Nevertheless the figures suggest that there is a direct maternal mortality rate of 1% to 2% for surgical induction when conditions are not entirely favourable, and that we may be gravely disconcerted in 5% of cases and disappointed in many more.

I do not wish to emphasize this aspect of failure and disappointment; but little heed is given in reports on induction to the occasional troublesome case, and our enthusiasm for any method must be tempered by the thought that there is a treacherous case waiting somewhere in our path. It is important to recognize that induction is fundamentally a preventive measure, and criticism of its failures must weigh with us as much as enthusiasm over its successes. This element of uncertainty introduces the question: What should be done if there is a delayed response to surgical induction? Fortunately this is not common, but occurs sufficiently often to give some concern and provides one of the minor problems of consultation practice. Should we put in a bag? With a tube induction should we remove the tubes, should we reinsert them, or should we leave them? Speaking in a general way, if medicinal stimulation, including pituitrin, did not help to provoke the labour on the third day, I should remove the tube and wait and see; in the rare event of pronounced deterioration of the patient's condition—many are toxæmic—I would perform an "escape" Cæsarean section.

Correlation.

It is not my function to discuss the desirability of induction in particular conditions; but it is reasonable to point out that the value of any method cannot be assessed solely by the response in simple cases at or near term. For example, it is hard to compare the following series of surgical inductions. Jackson[11] gives records of 500 cases, in 406 of which labour was induced by election at term, and in 38 the patient suffered from toxæmia or nephritis. Guttmacher and Douglas[8] had a total of 120 cases, 115 at term. At the Women's Hospital, Melbourne (total mechanical cases 383), induction was done for toxæmia and nephritis in 302 cases; labour was induced before the thirty-sixth week in 118 cases.

[1] Abdominal pregnancy.

The adequacy of any method therefore must be correlated with the abnormal conditions present when interference is definitely indicated. In this connexion I would ask the following:

1. What is the best method in disproportion? For maturity and for disproportion in *primiparæ* we are not very determined in the matter and use the half-hearted medicinal stimulation; we avoid the surgical methods because of uncertainty as to the action of the uterus, particularly in the *primipara*. For the *multipara* who has had a previous stillbirth or a very difficult labour we use the tube method.

2. What is the best method in toxæmia? We consider toxæmia to be our strongest indication for deliberate induction. We tend to use the tube for *primiparæ*, and artificial rupture of membranes for *multiparæ*, where the baby is of less account. It is the toxæmic case that provides unhappy situations, and the toxæmic *primipara* with a long cervix, who is barely viable, can be a most unattractive proposition.

3. What is the best method when the fœtus is dead? I do not know. While the patient is well we can repeat medicinal stimulation with some prospect of success; but sooner or later induction by means of a rectal tube may become necessary. If the temperature goes up we need a line of retreat, and the introduction of a bag as an accelerative measure may pave the way for a piecemeal extraction.

I shall not discuss other clinical conditions, except to suggest that when we rupture the membranes in cases of hæmorrhage, hydramnios and perhaps eclampsia, we are using a mechanical method of treatment rather than deliberately attempting induction.

Conclusion.

I have not attempted an exhaustive review of the subject. I have stated the use and the shortcomings of the methods of induction as I see them. I have slightly emphasized, but not unduly, I hope, the disconcerting side of induction, and you will join me in hoping for the discovery of a simple, reliable and harmless method which will revolutionize obstetrics.

Summary.

1. There is an annoying element of uncertainty with any method of induction.

2. The intrinsic value of a method depends on promptness, safety and way of escape.

3. If labour does not commence on the third day induction is losing its value and in surgical methods is becoming a menace.

4. If the onset of labour lags, a way of escape becomes necessary.

5. Medicinal stimulation is definitely useful when one is not insistent on success.

6. Surgical induction is the choice when a definitive result is required.

7. Surgical induction may cause concern in perhaps 5% of cases.

8. The adequacy of a method must be correlated with the conditions present. This must be considered when series of cases are compared.

9. Artificial rupture of the membranes is safest only when the result is prompt. It is probably the best method for toxæmic *multiparæ*.

10. Mechanical induction, for example, by means of rectal tube, is less compromising and is the more useful method in disproportion.

11. Other methods have been tried; but as yet there is no simple, safe, reliable method of induction.

Acknowledgement.

I have not burdened this paper with statistics, but much work has been done in the numerical establishment of various points. I am very indebted to Dr. D. F. Lawson, of the Women's Hospital, Melbourne, who has shared the tedium of statistical work with me.

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HOSPITAL ADMINISTRATION AND ORGANIZATION.

By J. H. BLACKBURN,
Medical Superintendent, Westwood Sanatorium, Queensland.

IT is in the interest of every medical officer appointed as medical superintendent to either a small or large institution to have a working knowledge of the administration as well as of the organization of the institution. As there are no handy pocket-books on the subject, a medical officer on first appointment very often finds himself at sea, as he has had no previous commercial training, which is a necessity for the smooth running of an institution. At the present time one must be conversant with the various awards and their interpretation, workers' compensation acts *et cetera*.

Hospitals are divided under the following headings:

1. General hospitals in large and provincial towns which are administered by a hospital board and hospital committee having a Government nominee whose duty it is to act on behalf of the Government.

2. A provincial general hospital with several smaller hospitals in the surrounding district under the administration of a hospital board.

3. Private hospitals.

4. Government institutions which are in charge of superintendents, who, as there are neither hospital boards nor committees in connexion with them, are directly responsible to the under-secretaries of their departments for their administration.

Office.

A card indexing system is to be found in all institutions and should comprise the following:

(*a*) *Patients*: An admission form and a card showing the personal history and diagnosis are necessary. The former is filed in the office and the latter is attached to the temperature chart, which is kept either by the sister in charge of the ward or by the nurse.

(*b*) *Nursing and Domestic Staffs*: There should be personal cards on which are entered details of salaries, annual leave, sick leave *et cetera*; also for each employee an "unemployment insurance contributions book".

(*c*) A duplicate copy of all correspondence, official or otherwise, should be filed in the office for future reference.

(*d*) A register of stamps should be kept.

(*e*) A register of salaries should be kept.

(*f*) A rubber stamp with the name of the institution should be at hand.

(*g*) A safe is a necessity.

(*h*) A metal cash box for petty cash and stamps should be kept.

(*i*) Wire baskets for inward and outward correspondence should be provided.

(*j*) A book for recording telephone calls should be kept, in which charges can be entered against persons making calls.

(*k*) A typewriter is necessary.

(*l*) The following articles will also be required: spike office files, assorted nibs, eraser, adhesive paper, spring paper clips, paste, box of pins, blotting paper, foolscap and copying paper, carbon sheets, red and black ink, brass paper clips, stamp sponge, standard date cards *et cetera*.

Telephone.

1. A local telephone directory and one of the capital city should be kept.

2. A record of the main telephone numbers and addresses of all local tradesmen, the ambulance, the police, the fire brigade, the chemist, medical men *et cetera* should be typed and placed on the wall next to the telephone.

3. A blank writing pad, with a lead pencil attached, should be nailed on the wall next to the telephone for recording telephone calls, messages *et cetera*.

Mail.

A canvas mail bag with a brass clip (army pattern), padlock and key, should be available. A smaller canvas bag for the letters *et cetera* should be handy and placed in the larger one.

All letters should be strictly readdressed when necessary.

Stores.

1. Where practicable, there should be separate stores for drugs, linen, groceries *et cetera*, if the institution happens to be a large one; otherwise one store will have to do for these materials.
2. There should be a duplicate key of the store, and the key should be in possession of one of the officers, for example, the matron.
3. All stores and drugs should be ordered for six months in advance, as this will save much clerical work, freight and labour.
4. A ledger should be kept in the store for entering daily distributions, which can be signed for by those who take charge of the material, either for the wards or for the kitchen.
5. All records should be kept up to date for the auditor.

Patients.

1. All admissions and discharges should be carefully recorded.
2. A framed copy of the rules and regulations of the institution should be in every ward.
3. Patients should leave their addresses on being discharged.
4. In case of urgency, if the patient's life is in danger, relatives and clergyman are to be advised at once.
5. All personal linen should be properly marked.
6. On admission all valuables and moneys should be taken charge of and a receipt should be given. These can be entered to the trust account.
7. In the event of death an inventory of the patient's possessions should be made in duplicate. The general rule is for one copy to be retained and the other forwarded to the public curator.

Staffs.

1. All employees should be insured under the *Workers' Compensation Act*, and in case of accident the department concerned must be advised within twenty-four hours.
2. On no account should any casual traveller or itinerant person be allowed to perform any work; for if an accident did happen, the person concerned could claim damages and also wages for work done.
3. Time sheets for each staff, showing hours on and hours off and days off, and a copy of the wards, should be placed in the respective dining rooms.
4. All employees should also fill in and sign their individual time sheets, and these should be checked in the office and filed for reference. The labour agent or one of the departmental officers can ask for the inspection of these, and also, if there happens to be a dispute with regard to overtime, these individual sheets can be referred to.
5. All personal linen and cutlery should be properly marked.
6. Day and night report books should be provided for the nursing staff.

Kitchen and Pantry.

1. All tables in the kitchen and pantry should be covered with tin, which will save time and labour, also sandsoap.
2. A bread-box lined with tin, two feet square by three feet, is handy.
3. Wire covers for food are required.
4. Empty kerosene tins painted white, with a wooden frame round the top and a tight-fitting wooden lid, are useful for tapioca, rice, barley *et cetera*.
5. A meat chopper and block are necessary.
6. A small weighing machine is needed for weighing various articles and also the butchers' supplies occasionally.
7. A slate on which the cook enters the different items for meals should be provided.
8. A washing-up tin, made of an empty kerosene tin split in two, with a wooden frame round the rim, is a useful adjunct.

Fire.

1. A notice should be placed in the laundry, directing that the current must be turned off any electric irons at the end of the day's work.
2. All fire hydrants and hose should be in good order.
3. Fire extinguishers should be strictly inspected periodically.

Lights.

1. All electric lights should be periodically inspected.
2. Enamelled shades (white internally and blue externally) will be found more economical than porcelain ones.
3. For night lights, from 9 p.m. onwards, electric bulbs of 25 candlepower will be found serviceable, and should be well shaded so as to subdue the light.
4. Electric torches for those on night duty will be found an advantage.

Dispensary.

1. Winchesters of stock mixtures should be on hand. Certain compounds can also be prepared in the dispensary.
2. Medicine baskets for each ward, divided into twelve squares for bottles (same pattern as a wine basket), will be found useful for serving medicine at the bedside, and are also handy in the dispensary.
3. There should be the following articles: scales, enamelled measures (graduated up to two pints), small weighing machine, enamelled funnels, labels *et cetera*.

4. A half-yearly return of the consumption of both rectified spirits and absolute alcohol has to be rendered to the excise and customs officer. An application for a fresh supply has also to be made to that officer.

General.

1. Empty kerosene tins and packing cases should be kept, as they can be put to useful purposes by any handy man.

2. Two galvanized iron bins, each with an iron hoop round the bottom, should be provided for each ward, one for refuse paper and the other for food scraps. They can be emptied when necessary.

3. An incinerator is necessary. It should be built as far back as possible from the main buildings.

4. A garden for vegetable produce should be made if possible.

5. Poultry may be kept, also a few pigs, for the consumption of kitchen refuse and food scraps.

6. A canteen for patients should be established in country districts where practicable; any profits accruing should be banked and the account named "Patient's Cheer Fund". This money can be used for wireless purposes, purchasing presents at Christmas *et cetera*.

Reports of Cases.

CARCINOMA OF THE APPENDIX ASSOCIATED WITH ACUTE APPENDICITIS.

By RUSSELL N. HOWARD, M.D., F.R.C.S.,
Melbourne.

THE following case seems worthy of reporting because of its clinical interest and because it serves to show the necessity of keeping careful watch for atypical features during the conduct of a case of acute appendicitis along the Ochsner-Sherren line of treatment.

L.W., a female, aged forty-seven years, was admitted to Saint James's Hospital, Balham, London, on December 26, 1935, with the following history. Seven days previously the patient had noticed somewhat colicky abdominal pain in the region of the umbilicus. About two hours after the onset of pain she vomited once, and shortly after this the pain moved to the right iliac fossa and lost its colicky nature. For the first twenty-four hours the pain was severe, but then ameliorated, becoming a dull ache, which was present at the time of her admission. The bowels had functioned regularly. There was severe anorexia.

The temperature was 37·4° C. (99·4° F.), the pulse rate was 84 and the respiration rate 22 per minute. The patient was rather thin. A mass, about the size of a tennis ball, firm, tender and fixed, was palpable in the right iliac fossa. Very little rigidity was manifested. Rectal examination revealed no abnormality.

The diagnosis of acute appendicitis with a mass was made, and Ochsner-Sherren treatment was instituted. All acute signs and symptoms subsided, and on January 20, 1935, the patient was discharged from hospital. A hard, movable, non-tender mass, about the size of a golf ball, was then present in the right iliac fossa.

The patient was kept under intermittent observation in the out-patient department. The clinical condition of the patient and the mass remained unchanged during the next twelve weeks. On April 14, 1936, she was readmitted to hospital for operation. X ray examination after a barium enema revealed no abnormality. Operation was performed on April 20, 1936. A right lower paramedian incision was made and extended upwards to just above the umbilicus. The abdomen was opened after retraction of the rectus muscle, and a caeco-appendicular mass was disclosed and packed off. The tip of a large, thick, œdematous retrocaecal appendix was located, and one proceeded to strip it out from the mass towards its base. This proved difficult on account of adhesions. As traction was being exerted the appendix burst open close to its base, disclosing a fungating growth apparently arising in the appendix and obstructing its lumen. This was diagnosed as being a true carcinoma of the appendix, and the right half of the colon was removed forthwith in one stage in the usual way, a side-to-side anastomosis of the terminal part of the ileum and mid-transverse colon being performed after the making of blind ends. Reperitonization was effected. Some enlarged soft glands along the ileo-colic vessels were able to be removed entirely by the block dissection.

The post-operative course was uneventful, apart from a mild wound infection; the patient was discharged from hospital on June 1, 1936. Examination on August 26, 1936, revealed her apparently well. I have not seen her since; but a letter received from her on November 8, 1937, states that she continues in excellent health.

The pathological report on the tumour was as follows:

> Papillary tubular columnar-celled mucous carcinoma of junction of appendix and caecum; some infiltration of caecal wall. Subacute appendicitis.

Comment.

A reconstruction of events in this case is interesting. On the occasion of her first admission to hospital the patient was undoubtedly suffering from acute appendicitis. So much is evident from the history, course and subsequent biopsy. It seems evident that the partial obstruction of the appendicular lumen acted as a predisposing factor in this attack and later prevented complete resolution of the inflammation in the appendix.

The case forms an unusual commentary on the Ochsner-Sherren mode of treatment of acute appendicitis. The persistence of hard masses in the right iliac fossa for weeks and even months after an attack treated by this method is not very rare. They usually consist of thickened appendicular and caecal walls surrounding inspissated pus and a fæcolith. They are almost invariably fixed in the right iliac fossa. These masses disappear eventually, and it is most advisable to defer operation until they do so. In view of this, an accurate pre-operative diagnosis was impossible in this case; but carcinoma was suspected because of the complete failure of the mass to disappear, and because of its mobility. Had one realized earlier the exact state of affairs, operation would, of course, have been expedited; although it is certainly fortunate that the patient was not operated on within a day or so of her first admission to hospital.

The Ochsner-Sherren treatment thus prevented the tragedy of immediate operation, and although there may be some who consider that earlier intervention was advisable, it is obvious that one should not condemn an excellent principle of treatment because of a freak case, nor modify a well-tried method of application of this principle. One must note here that this case is in quite a different category from carcinoma of the caecum with surrounding inflammation and a mass in the right iliac fossa. The difference lies in the fact that the patient under consideration did have a true acute appendicitis, with the classical shifting of pain from the region of the umbilicus to the right iliac fossa. This precluded the possibility of a diagnosis of carcinoma of either the appendix or caecum until the efflux of time presented the case with anomalous features.

Finally, a perusal of the literature has shown the rarity of true carcinoma of the appendix and, although the

association of acute appendicitis with carcinoid tumours of the appendix appears not extremely rare, I have failed to find another case presenting such an interesting sequence of events.

Reviews.

AUGUSTE FOREL.

IF he wishes to produce a planned and unified account of his life, the author of an autobiography should, having first decided which of his companions and experiences have most influenced his development, give them due prominence in his work. With this thought in mind, one would expect a psychiatrist to excel in this literary field, but "Out of My Life and Work",[1] by Auguste Forel, falls short of excellence for several reasons. He gives us an austere, workmanlike and comprehensive account of his extraordinarily varied career, but it is little more than a chronological record, devoid of humour and of the indefinable subtleties which give life and meaning to writing of this kind. We learn little of his mind, and he rarely describes his associates; they remain impersonal and lifeless. It is probable that in its original form the book reads less like a case report, for it must be remembered that shades of thought and meaning may be lost in the best of translations. Despite the coldness and formality of the treatment, however, the book is more worthwhile than many of the biographies and autobiographies constantly published by an alarmingly increasing body of major and minor celebrities, for its author has much to tell.

Auguste Forel was born in Switzerland in 1848. His childhood was of the variety flippantly described by a frivolous modern playwright as "grim and church-ridden"; he was lonely and odd, filled with fears and afflicted with a lack of self-confidence which persisted until he married. It was during his first eight years that he undertook the study of the life and habits of ants, which was to take him later to South America, Canada and north Africa, and to which he devoted all of his spare hours. As a schoolboy and medical student in Zurich he was gloomy and repressed. Before he graduated he worked for a time under Dr. Meynert, and it was at this stage that he first became interested in neurology, in which he afterwards specialized, and at this period too he published a book on the ants of Switzerland, which gained for him the Thore Prize.

In 1876, when he was assistant physician at a hospital for the insane in Munich, Forel observed the effects of alcohol upon his patients, became an abstainer himself, and acquired, in the cause of abstinence, a third great interest. Upon this question alone was he at all fanatical—fanatical in a way that is sometimes amusing. He writes, for instance, of a certain ship's doctor who "seemed to know something of surgery although he was a drinker", and he tells us nothing of Nansen, whom he met, except that he was an abstainer! At the age of thirty-four he married, and a happy change took place in his life. His gloom, doubts and fears appear no more, and Frau Forel, gentle, calm and wise, helped him with his work at the Burghölzli Asylum and with his ever-active campaign against alcoholism. Before he retired in 1898 from the directorship of the hospital and relinquished his professorship at the University of Zurich, Forel had pursued the scientific and practical developments of hypnotism, had founded the *Journal für Psychologie und Neurologie*, was a pioneer in work in occupational therapy, had established Good Templar Lodges, was actively concerned with the affairs of the Ellikon Sanatorium, and was a celebrated myrmecologist. Until he was disabled by a paralytic stroke in 1912 he worked vigorously at these many chosen interests, wrote copiously and travelled widely.

An improvement in health and the problems of the Great War brought Forel, a neutral and a pacifist, new occupations. The thought of the intrepid semi-invalid of sixty-seven setting out with his rucksack to cross war-time Europe to attend a peace conference at the Hague in 1916 calls forth nothing but admiration. His autobiography was finished in 1920, and concludes with an epilogue, in which he sums up the value of his experience and gives what he calls his political and social testament. His personal testament, which he left to be read by his son at his cremation, is appended. In this unusual funeral oration we discover at last the spirit of Auguste Forel, whose life and integrity we must respect and admire.

[1] "Out of My Life and Work", by A. Forel, translated by B. Miall; 1937. London: George Allen and Unwin Limited. Demy 8vo, pp. 352. Price: 16s. net.

THE PLAY OF CHILDREN.

THE significance of the play of children as an indication of personality and as an aid to understanding was realized by the earliest students of child psychology. At meetings of the conference arranged last year in Australia by the New Education Fellowship, Dr. Susan Isaacs stressed the importance of this aspect of child life, and she expresses her views in a preface to Marjorie Thorburn's "Child at Play"[1] in the following words: "It is universally agreed nowadays that the child's play is for the child himself at one and the same time his means of living and of understanding life, and for us the shortest and surest way of gaining knowledge of his feelings and attitudes, his questions, his interests and his wishes." Mrs. Thorburn believes that parents must see most of the natural behaviour of young children, for only with his mother or father is the child truly free and spontaneous. She gives, in the first part of her book, an account of the general outline of her daughter's play, from her earliest infancy, when her play material was her own body, until she was four years of age and her interest was attracted by her younger brother and by many external objects, and she has been careful to supply details of the home environment and companions in order that their influence may be correctly estimated. The study of a particular period which follows this general survey is the largest and most interesting section of the book. It was made when Mary Thorburn was between the ages of three years and two months and three years and five months, and during this period she was watched by her mother for half an hour each day at a time when she was free to choose her own companions and occupations, and every movement and remark made has been recorded, but no attempt at interpretation has been made. The observer writes: "Mary smiled" or "Mary frowned", never "Mary looked pleased" or "Mary appeared angry". Thus we see the child as she is, and we begin to understand her problems and her efforts to learn and to adapt herself to her surroundings.

In a short final chapter, modestly entitled "Notes on the Use of Material", Mrs. Thorburn explains how, if read with imagination and insight, her notes give some real knowledge of the child and of her problem of lining-up, directly and indirectly, with the world of human beings; her problem of the mastery of material objects; and her problem of self-expression. In her play Mary encounters situations which in type will recur throughout her whole life, and it is instructive to see how she deals with them, for at three years of age she has behaviour patterns which may never alter.

If the authoress belongs to any established school of educational or psychological thought it is not apparent. She observes, and we may build what we choose on what she writes; but no one could read this book without gaining some understanding of, and a greater sympathy with, the very young child. The value of any book that achieves this result need not be stressed.

[1] "Child at Play: Observations", by M. Thorburn, with a foreword by S. Isaacs; 1937. London: George Allen and Unwin Limited. Crown 8vo, pp. 187. Price 6s. net.

The Medical Journal of Australia

SATURDAY, MAY 28, 1938.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

NATIONAL HEALTH INSURANCE.

WHEN the executive committee of the Federal Council had completed its negotiations with the Federal Government prior to the introduction of the National Health and Pensions Insurance Bill, it was made clear to the Government that the Federal Council could not bind its members by any agreement that had been reached. The Federal Council speaks for the Association; but in a new matter, and one that has such possibilities for good or ill as national health insurance, its members throughout Australia had to be consulted. The members have now spoken and have made it clear that there is a great deal of opposition to some of the provisions of the bill. The executive committee therefore met in Sydney on May 21, 1938, and decided to submit to the Government the views of members and to suggest certain amendments. A statement issued by the authority of the executive appears on page 943.

In the first place an increase in the capitation fee will be proposed by the Federal Council. The Commonwealth Treasurer will be informed that 14s. *per annum* in metropolitan areas and an additional 25% (making 17s. 6d.) *per annum* in country districts are the minimum rates acceptable to the profession. There are many reasons why country medical practitioners should receive higher capitation fees than metropolitan practitioners for contract practice; they have in the past and they should continue to do so. In regard to the proposed mileage rates, points that have been stressed by general practitioners, especially country practitioners, since the introduction of the bill are: first, the rate itself is inadequate, and secondly, as a deterrent to persons apt to demand visits for frivolous complaints, some of the cost at least should be met by the patient. The Federal Council will submit as the views of the profession: (i) that the mileage rate should be 2s. 6d. per mile, 6d. of which should be paid by the patient; (ii) that mileage fees should be paid for any distance beyond two miles—the radius recognized by Government departments, for example the Repatriation Department.

Possibly the greatest dissatisfaction expressed by medical practitioners generally has been in regard to the lack of provision for fees for night calls. The majority would prefer to have no night fees and no night calls; but, as night calls cannot be avoided, there should be some fee, which should be payable by the patient, so that calls shall be restricted in number. Medical practitioners are given the privilege of making a complaint when they think unreasonable demands on their services have been made; but such a procedure does not meet with the approval of members of the British Medical Association generally. The Federal Council will ask for provision for the payment of a fee of 2s. 6d. for calls between the hours of 8 p.m. and 8 a.m.

There is more or less general disapproval of various other clauses of the bill. First, as anæsthetics are outside the terms of service, the matter of fees for anæsthesia should be the concern of the anæsthetist and the patient only. Secondly, treatment of acute alcoholism and acute venereal disease should be among the services excluded from the scheme. Thirdly, as the treatment of fractures and dislocations often demands a great deal of time and worry, and requires more than ordinary skill and experience, it is considered that the more complicated and difficult ones should be excluded

from the services to be rendered under the scheme. The Federal Council will submit that schedules should be drawn up, showing which fractures and dislocations are included and which excluded. Finally, the view has been generally expressed that attention for premature births and abortions should not be included in the terms of service. The Federal Council, on behalf of the profession in Australia, will submit recommendations to the Government that the clauses dealing with these matters should be amended so as to agree with the views of the profession as a whole.

Some scheme of national health insurance is inevitable. It will require the cooperation of members of the British Medical Association, forming as they do the great bulk of medical practitioners in Australia, for its efficient working. It is right, therefore, that their views, both radical and moderate, should be taken and correlated and moulded into a concrete whole for submission to the Federal Government, and it is right that the Federal Government should not only listen to them, but weigh them carefully and, if possible, accept them. The Federal councillors have worked hard and earnestly and at considerable personal sacrifice in their endeavours to obtain a fair and honourable agreement with the Government.

It is our great regret that we were unable to reveal to our readers the results of the Federal executive's negotiations with the Government long before we did. Our leading article of May 14, 1938, had been ready for the press for many weeks before its publication.

Current Comment.

THE RÔLE OF THE ANTERIOR PITUITARY LOBE IN THYREOID DISEASE.

SINCE the discovery of the thyreotropic hormone of the pituitary gland a great amount of work has been done with the object of establishing its relationship to morbid states involving the thyreoid gland. This hormone, when injected into suitable animals, causes an increase in size and vascularity of the thyreoid, and well-marked hyperplastic changes occur in its epithelial structure. At the same time an enhancement of the functional activity of the gland is evidenced by the familiar signs in the physiological processes of the animal's body. In other words, signs, such as loss of weight, nervousness, tachycardia and raising of the metabolic rate, can be produced by administration of a preparation of the pituitary thyreotropic hormone in a normal animal, and even exophthalmos has been produced on occasion. These effects are observed only if the thyreoid gland is present and functionally intact in the animal under observation. It is interesting to remark in passing that exophthalmos, the only one of these symptoms not due to a direct effect on the thyreoid gland, is more readily produced if the animal has previously been deprived of part of the thyreoid gland. Conversely, the ablation of the anterior pituitary lobe in an animal produces a change of the thyreoid to the resting and inert state, so that it appears certain that the maintenance of adequate and correctly balanced thyreoid activity in the normal animal depends upon the correct output of the appropriate pituitary hormone. But what occurs in the human subject who suffers from the clinical disease we know as Graves's disease or hyperthyreoidism? It is a most attractive hypothesis to assume that an excess of thyreotropic hormone in the blood would account for this syndrome, and when we recollect the close anatomical and functional apposition of the pituitary to the hypothalamic nervous centres it would seem easy to link up the psychological and nervous factors with the chemical changes in this disease. Unfortunately the necessary scientific link is missing. Cuthbert L. Cope has set out to supply this link, and has conducted an investigation into the relations of the pituitary thyreotropic hormone to thyreoid disease in the human subject and the laboratory animal.[1] The hormone used in experimental work was a potent though not quite pure preparation, and a dose of five milligrammes injected daily for five days could double the weight of the thyreoid gland in standard guinea-pigs. The criterion of glandular activity in these animals was histological evidence of hyperplasia, but allowance was made for such changes as may be seen normally in the glands of young active animals. The presence of the pituitary hormone was proved in human glands obtained at *post mortem* examinations. Cope paid special attention to the demonstration of the thyreotropic hormone in blood and in urine, and describes two methods by which it may be recovered by concentration from the latter. He discovered that an increased amount of the hormone could be found in the blood of rabbits whose thyreoid glands had been removed, but no hormone could be demonstrated in normal human serum. Serum from two patients suffering from myxœdema similarly showed no evidence of thyreotropic activity, but, rather contrary to expectation, the serum of patients with Graves's disease not only showed no increase in thyreotropic activity, but appeared to have a depressant action on the thyreoid gland. This apparently anomalous result is believed by the author to be

[1] *The Quarterly Journal of Medicine*, January, 1938.

due to the presence in the blood of thyreoid hormone in excess. Similar investigations carried out on concentrates of urine from healthy persons and patients suffering from hyperthyreoidism similarly failed to show any thyreotropic activity. Certainly a degree of enlargement of the thyreoid gland of the test animals was observed, but this was not associated with hyperplasia. On this evidence, then, it would appear that there is no proof that the clinical syndrome of hyperthyreoidism is due to an excessive activity of the anterior pituitary gland, though Cope thinks that a lack of thyreotropic hormone may be a factor in causing some cases of myxœdema.

It seems that the chemical side of this problem needs further inquiry, which is likely to be patient and prolonged. At present we cannot say that we know with certainty what are the precise causes of Graves's disease or the exact nature of this condition. Its ætiology is quite probably multiple in nature, but even so we shall have gained much once we are reasonably sure of the mechanism involved.

LYMPHOGRANULOMA INGUINALE.

LYMPHOGRANULOMA INGUINALE, known sometimes as *lymphopathia venerea*, is a disease which has hitherto been of merely academic interest to Australians. In view, however, of its increasing incidence over the world, there is no reason why Australia should continue to remain almost or quite exempt from this infection. Particularly the disease should be looked for in the northern areas and amongst the aborigines. When the disorder does occur, it frequently presents intricate problems in diagnosis. In this connexion the Frei test is said to be invaluable, and its more extensive use has led to the more frequent recognition of the disease. Rectal stricture has been shown to result from this ailment in females especially. In many cases extensive induration, involving the peri-rectal structures, and enlarged inguinal lymph glands, which may break down and suppurate, may occur. R. D'Aunoy and J. R. Shenken direct attention to the necessity for considering *lymphogranuloma inguinale* as a cause of pelvic inflammation.[1] They point out that von Haam and D'Aunoy previously (in 1936) reported that 33% of females who suffered from this disease complained of pain in the lower lumbar and sacral regions. The pain was more marked on any attempt by the patient to lie down. This symptom was observed only in 6% of males, and was deemed to be due to implication of the deeper pelvic lymph glands, such an occurrence being common during the course of female infection. They further suggested the possible ætiological connexion of venereal lymphogranuloma with the chronic pelvic inflammation so prevalent amongst negro women in Louisiana. F. Franchi reported in 1934 an operation upon a woman suffering from *lymphogranuloma inguinale*, who had complained of acute pelvic symptoms and in whom he found in the left tubo-ovarian region an inflammatory mass bound by many adhesions to the rectum and sigmoid. The mass contained pus from which a powerful Frei type of antigen was made. D'Aunoy and Shenken record a case simulating simple *salpingitis nodosa*, in which the microscopic findings were strongly suggestive of venereal lymphogranuloma. However, definite proof was not established that the virus was the actual causative agent. The woman concerned manifested great tenderness in the right lower quadrant of the abdomen and over both adnexæ, and was found to have a small mass in the right lower part of the abdomen. Her appendix was removed and bilateral salpingo-oophorectomy performed. The tubes were nodular and contained purulent material. The histological appearances were so suggestive of the typical suppurative lesions of the lymphatic glands seen in patients affected with venereal lymphogranuloma that Frei tests were made on the patient with two different antigens. Both were strongly positive. No inguinal buboes could be found, nor was there any rectal stricture or any significant lesion of the external genitalia. The patient stated that she had never suffered from enlarged inguinal lymphatic glands. There was no evidence that she had ever been infected with the virus of venereal lymphogranuloma. However, on the strength of the positive Frei test, D'Aunoy and Schenken consider that the case should be classified as one of *lymphogranuloma inguinale*. The only remaining question is whether Frei's test is absolutely specific. Not all authorities are convinced that it is, since unexplained discrepancies have arisen in its application.

[1] *The Journal of the American Medical Association*, March 12, 1938.

CHRONIC HYPOCHROMIC ANÆMIA.

THE list of names applied to the anæmias has not yet ceased to grow. This suggests a lack of understanding. It is refreshing, therefore, to read that in the opinion of one group of observers there is at least one anæmia that has no just claim to its title. Solomon G. Meyers, A. Hagen Price, H. C. Mack, Linus J. Foster and E. A. Sharp, after making a study of 26 women suffering from so-called idiopathic hypochromic anæmia, have come to the conclusion that the term "idiopathic" is seldom justified.[1] In all their 26 cases certain ætiological factors were discoverable. Among these factors they mention deficient meat or iron intake, hypochlorhydria, hypothyreoidism, menorrhagia and other forms of bleeding, and repeated pregnancies. An anxiety state was a frequent accompaniment of the anæmia. Logical methods of treatment produced satisfactory results.

Precipitancy in tagging names to groups of symptoms is to be deplored. Once established, a wrong name is difficult to remove. The danger is in the general acceptance of the name as descriptive of the condition.

[1] *Annals of Internal Medicine*, March, 1938.

Abstracts from Current Medical Literature.

THERAPEUTICS.

Absorption of Drugs.

D. I. MACHT (*The Journal of the American Medical Association*, February 5, 1938) discusses the absorption of drugs and poisons through the skin and mucous membranes. He has investigated the absorption of a great number of drugs and poisons, by applying them to the skin and mucous membranes of rabbits, mice and other small animals. He claims that his experiments showed that opium was absorbed through the skin in sufficient quantities to affect the superficial sensory nerve endings. He has found that essential oils, such as cinnamon, cloves, anise and peppermint, penetrate the skin rapidly, and that one cubic centimetre of any of these oils, applied to the skin, causes unconsciousness and death in less than two hours. Macht has employed essential oils as vehicles for other potent drugs, and has found that the pharmacological effects of morphine, strychnine, cocaine, atropine, insulin, heparin and other substances can be produced by applying these drugs to the skin in conjunction with an essential oil. Nicotine, applied in minute doses to either skin or mucous membrane, was rapidly absorbed, with pronounced toxic effects. This author found that absorption of drugs after inunction of ointments containing them was negligible.

The Anæmia of Myxœdema.

USING sixty-seven albino rabbits as clinical material, John C. Sharpe and J. Dewey Bisgard (*Journal of Laboratory and Clinical Medicine*, December, 1937) subjected forty-one of them to total thyreoidectomy; the remainder were used as controls. In the first two months following operation there was a progressive decrease in the amount of hæmoglobin and in the number of erythrocytes, associated with a gradual increase in the mean corpuscular hæmoglobin and in the mean corpuscular volume of the erythrocytes. During the third, fourth and fifth months the amount of hæmoglobin increased slightly. The effects of administration of liver, thyreoid extract and iron were observed. Each observation period lasted twenty-eight days; the first week served to define the controls. On the seventh day the various preparations were first given and the administration was continued for three days in the group receiving liver, and for ten days in the groups receiving iron and thyreoid extract. Liver extract was given both intravenously and intramuscularly. Thyreoid extract as an aqueous suspension, and iron and ammonium citrate, in a 50% solution, were administered through a stomach tube during a fasting period. Daily reticulocyte determinations were made during the feeding period, and differential blood counts were made on the tenth and twenty-first days after the commencement of the test period. In the group fed on thyreoid extract (two grains for ten days) there was a reticulocyte rise from an initial 1·3% to 12% on the fifth day, followed by a sharp and sustained rise in both hæmoglobin and erythrocyte levels. Two other groups were fed on thyreoid extract, in four-grain and six-grain doses; the normal controls in these groups did not tolerate the larger dose, while their anæmic, myxœdematous litter mates showed no apparent ill-effects, but lost their anæmic condition; the response of the hæmatopoietic system to the larger dose of thyreoid extract was not so good as the response to the two-grain dose. Even the use of liver intravenously did not prevent the steady progress of the anæmia. Intramuscular injection of liver, however, caused the reticulocytes to rise to 6·5% on the fifth day, and this was followed by a slight but definite increase in both hæmoglobin and red cell counts. A daily dose of fifteen grains of iron and ammonium citrate had no effect on the anæmia of thyreoidectomized animals, although the red cells and hæmoglobin increased very slightly. It is generally considered that the anæmia of myxœdema is the result of the effect on the bone marrow of the sluggish oxidation that presumably occurs in all tissues. That the thyreoid gland has a direct influence on hæmatopoiesis is evidenced by the consistent response of the anæmia of myxœdema to the administration of thyreoid extract alone. In the totally thyreoidectomized rabbit the anæmia is characterized by macrocytosis and hyperchromia, and is not affected by iron. If, however, the anæmia is normocytic and perhaps hypochromic, these authors consider that the addition of iron should accelerate the regeneration of erythrocytes and the formation of hæmoglobin.

Sulphanilamide in Gonococcal Urethritis.

JAMES L. FARRELL, YALE LYMAN AND G. P. YOUMAN (*The Journal of the American Medical Association*, April 9, 1938) record experiments devised to discover how the effect of sulphanilamide on genito-urinary infections is produced. Large male dogs were given sulphanilamide by mouth for several days, the daily dose being approximately 0·18 grammes per kilogram. After anæsthetizing the dogs with phenobarbital the authors were able to collect the prostatic secretion and also the secretion of the glands of the posterior urethra. In addition, samples of blood and urine were collected from each dog. The content of sulphanilamide in these specimens was determined by the method described by Marshall. The specimens were then tested for germicidal activity against some strains of staphylococci and colon bacilli. The experiments showed that sulphanilamide was excreted in bactericidal concentrations, in both the urine and the secretion of the posterior urethra, provided adequate doses were given. In the experience of these authors, from 10 to 15 milligrammes *per centum* seemed to be adequate antiseptic concentration. Gonococci were not used in these experiments because of their extreme susceptibility to change in various media and temperatures. The authors suggest that their experiments provide an explanation of the action of sulphanilamide in genito-urinary infections.

Parenteral Administration of Vitamins A and D.

W. N. LEAK (*The Lancet*, March 12, 1938) records his experiences with the administration of a concentrated oily preparation of vitamins *A* and *D* by intramuscular injection. This preparation contained as its active ingredients 60,000 international units of vitamin *A* and 10,000 international units of vitamin *D* per cubic centimetre. He gives an account of the benefits apparently obtained by the injection of this product in patients suffering from a large variety of conditions encountered in general practice in a country district. He has given some 1,500 injections of this product to patients with various local and general infections, and to a few patients suffering from various nervous diseases. The doses used varied from one to five cubic centimetres in twenty-four hours, and were much higher than those usually employed. Only on rare occasions has he used continuous high dosage; the point brought out by his work is the striking effect of large doses of vitamins *A* and *D* given during a short period of time. The author admits that his investigations, undertaken in the course of a general country practice, are incomplete and not well controlled. He has, however, almost always observed clinical improvement in suitable cases, and considers that administration of vitamins *A* and *D* by injection should receive wider trial. He disclaims any wish to substitute this therapy for the many other natural and artificial means of combating infection. He suggests that vitamins *A* and *D*, given in this way, have a direct rather than an indirect action, and that they supply to the cells of the body something which they require for complete health.

Sulphanilamide.

H. F. SWIFT, J. K. MOEN AND G. K. HIRST (*The Journal of the American Medical Association*, February 5, 1938) describe their investigations of the action of sulphanilamide in rheumatic

fever. Sulphanilamide was administered in doses of two to four grammes daily for six to eight days, to eight patients selected from a group of patients with rheumatic fever. The impression the authors received from their study was that no patient benefited, and several were made worse by the course of treatment with sulphanilamide.

NEUROLOGY AND PSYCHIATRY.

Puerperal Psychoses and their Sequelæ.

L. J. KARNOSH AND J. M. HOPE (*The American Journal of Psychiatry*, November, 1937) have made a statistical study of 231 patients in whom childbirth was complicated by psychosis. They find the expression "puerperal insanity" too narrow, and consider that the mental disorders associated with childbirth should be regarded as composite phenomena or resultants of an underlying biogenic weakness, superimposed psychological stresses and precipitating toxic and exhaustive factors. The frequency of such psychoses is greatly influenced by situational and social factors. They claim that the only characteristic element in a true *post partum* psychosis is delirium, which appears in varying intensity. No specific endogenous or exogenous factors were revealed by their study. In women of cyclothymic disposition, childbirth may lead to an increased frequency of manic or depressive attacks, even though subsequent pregnancies do not occur. The purely delirious types of psychosis with rapid recovery occur in women of stable mental make-up. Delirium, however, may be followed by a schizophrenic psychosis, the outstanding trend of which is a hebephrenic regression. This occurred in those women who showed a prepsychotic schizoid personality, and was often associated with evidence of an hereditary taint.

The "Cardiazol" Treatment of Schizophrenia.

E. SORGAR AND E. HOFMANN (*Psychiatrisch-Neurologische Wochenschrift*, October 9 and 16, 1937) report their experiences with one hundred cases of schizophrenia in which treatment with "Cardiazol" according to the method of Meduna was used. At first a 20% solution of "Cardiazol" was employed, but as this caused such extensive damage to the veins as to render subsequent injections difficult, it was abandoned in favour of a 10% solution. It was observed that in most cases in which the patient breathed deeply during the injection and continued to breathe deeply, no fit was obtained. With patients who were in a state of severe excitement at the time of the injection, the fit frequently failed to occur. The changes produced in the blood sugar level by the convulsions were studied. In the great majority of cases the blood sugar commenced to rise immediately after the fit, reached its maximum in about thirty minutes, and then declined, at first rapidly and later more slowly, to the initial level or below it. A low tolerance for "Cardiazol" was found to be indicative of a favourable outcome of the treatment. The presence of an hereditary taint did not appear to have any significant influence upon the outcome of the treatment. Forty-nine *per centum* of all the patients treated, and 76% of those in whom the duration of the illness was less than six months, sustained a remission. Cases of katatonic stupor gave the best and most rapid response to the treatment.

Behaviour under Benzedrine.

CHARLES BRADLEY (*The American Journal of Psychiatry*, November, 1937) observed the effect of benzedrine on thirty children suffering from various behaviour disorders, but with normal intelligence. The dose in most cases was twenty milligrammes; and psychological effects were noted in most children in from thirty to forty-five minutes after the oral ingestion of the drug. There was a spectacular improvement in school performance in half the children: a large number became emotionally subdued without losing interest in their surroundings. Sleep was mildly disturbed in six subjects, but agitation and irritability were observed in only one child. Other changes in behaviour were noted, and variations brought about in the Berger rhythm were discussed. The author believes that benzedrine may find a useful place in the treatment of behaviour disorders when its use is supervised by physicians trained in child psychology.

Epilepsy: A Paroxysmal Cerebral Dysrhythmia.

F. A. GIBBS, E. L. GIBBS AND W. G. LENNOX (*Brain*, Volume LX, Part 4, 1937) have applied electro-encephalography to the study of epilepsy. The study is based on the examination of 400 epileptic patients, 120 of whom had seizures while connected to the electrical apparatus. The authors confirm an alteration in the normal Berger rhythm in patients with epilepsy, that is to say that cerebral seizures are accompanied by characteristic fluctuations in the action potentials of the brain. A different rhythm obtains for the different types of epileptic seizure: *grand mal* has a fast rhythm, psychic equivalents have a slow rhythm, and *petit mal* has an alternating fast and slow rhythm. The exact pattern of the rhythm varies with each individual patient. It has been found by the measurement of action potential that patients have subclinical seizures and that *petit mal* attacks may occur in sleep. There is electrical evidence that *grand mal* may be detected many hours in advance. Electro-encephalography proved to be of great value in studying the effect of anticonvulsant drugs. It was found, for instance, that the administration of bromide or phenobarbital decreased the rate of the cerebral rhythms, thus tending to check the *grand mal* seizure. Such drugs, however, may act unfavourably in *petit mal* by accentuating the slow waves. It was found that over-breathing tended to precipitate the *petit mal* rhythms which would disappear if the patient breathed air containing 3% to 7% carbon dioxide. It was further found that abnormal rhythms were greatly increased by the exhibition of insulin, and decreased by glucose. Normal mental activity tended to inhibit, and unpleasant emotional states to increase the frequency of *petit mal* rhythms.

The Treatment of Drug Addiction.

LAWRENCE KOLB AND C. K. HIMMELSBACK (*The American Journal of Psychiatry*, January, 1938) review the various methods advocated for the treatment of drug addiction. They are of opinion that tolerance to the opiates as well as physical dependence upon them are self-limited and quickly disappear when the drug is withdrawn, whatever treatment may have been given. Sudden withdrawal of opium may cause death; but the authors believe that more deaths have been caused by unwise treatment. They recommend rapid withdrawal in fourteen days or less, supplemented by certain supporting measures. Mild cases of addiction may be terminated abruptly. The intensity of the withdrawal symptoms and the tolerance to opium vary according to the make-up of the individual.

Psychosis and Cardiac Failure.

JOSEPH C. MICHAEL (*The American Journal of Psychiatry*, May, 1937) finds a lack of unanimity of opinion in the literature on the occurrence of psychosis with cardiac failure. Various theories have been put forward from time to time to explain major psychotic disturbances due to cardiac failure. In a review of 2,293 cases of heart failure the author finds only 23 patients who were treated for psychosis. Of these, there was associated syphilitic infection in three; alcoholism was an etiological factor in one; and thirteen had clinical signs of cerebral arterial degeneration. Apart from these cases the typical picture presented was that of the toxic psychoses: hypnagogic hallucinations, confusion, and exaggerated emotional activity with or without paranoid trends. The prognosis in this type is favourable. Recovery tends to coincide with improvement in the signs of heart failure.

British Medical Association News.

SCIENTIFIC.

A MEETING of the South Australian Branch of the British Medical Association was held in the Anatomy Theatre, University of Adelaide, on February 24, 1938, DR. R. E. MAGAREY, the President, in the chair.

Diverticulitis of the Colon.

DR. BRONTE SMEATON read a paper entitled "Diagnosis and Treatment of Diverticulitis of the Colon" (see page 911).

DR. H. A. McCOY, in opening the discussion, said that the colon presented many difficult problems to the X ray investigator. If he was satisfied to rely on the evidence obtained by the barium enema alone, many lesions of the colon would be missed. The arrangement of the colonic mucous membrane was complex, and the presence of the variable coils in any segment of the colon rendered impossible complete visualization of the lumen in any one film. It was essential, therefore, that the investigator should avail himself of each of the several modes of examination in general use. Both barium meal and enema provided useful evidence. It was a matter of personal choice among various investigators as to whether the meal or enema should be given first. As a rule, if the clinical picture indicated a lesion of the large bowel, it was expedient to proceed in the first place with the barium enema.

Fluoroscopy, Dr. McCoy said, was as essential in examination of the colon as it was in the remainder of the gastro-intestinal tract. The course of the enema, which flowed under low pressure, might be followed through each coil and flexure of the colon. Temporary arrest of the flow was therefore thoroughly investigated, and by rotation the entire outline of each successive segment was seen. After evacuation of the enema, sufficient barium remained adhering to the mucous membrane to provide information on the arrangement of the mucous folds, and in this way alteration of the lumen by tumours or small diverticula might be more readily seen than when the colon was filled with barium. If, then, the colon was inflated with air, further information on the mucous membrane was available. Finally, signs not previously apparent might be noted if an investigation was made twelve to twenty-four hours after the enema. It was found commonly that by this time pouches were seen filled for the first time. The follow-up of the barium meal might give similar information.

In routine examination of the colon diverticula were found fairly frequently; in one series they occurred in as many as 10%, but this was probably above the average. They were seen more often in males than in females, the ratio being two to one, and usually in stout subjects who suffered from constipation. Conditions which may be confused radiologically with diverticulosis included all other inflammatory conditions of the colon (caecal tuberculosis, regional enteritis, colitis, late effects of typhoid and polyposis) and neoplasm. The association of diverticulosis with carcinoma was said to be in the region of one in three, but this was disputed by many authorities; and most agreed that the association was incidental rather than actual. Dr. McCoy said that regional enteritis was included, as this condition (also known as regional ileitis) might, according to recent literature, involve the colon. Dr. McCoy referred to an article by Zaaiger which appeared in *The British Medical Journal* on December 18, 1937, at page 95, and in which the condition was recorded in two cases out of seven.

Diverticulitis might be divided radiologically into the prediverticular and diverticular stages. The typical picture of diverticulitis was seen in the sigmoid colon, and the lumen of the affected segment was constricted and had a saw-edged appearance. Many of the sharp tooth-like processes were surmounted by stalked diverticula. This was the picture seen under full distension by the enema. After evacuation, and particularly after air inflation, the pouches were seen more readily. Barium might remain in the pouches for several days, and, according to Köhler, might be seen ten days after the meal or enema. The pouches varied greatly in size, shape and distribution. Many were pedunculated, and the presence of fæcal contents within them might block the entrance of barium. Others might be large and sessile, with wide orifices. These were usually more common in the transverse colon.

Dr. McCoy went on to say that the exclusion of coexisting carcinoma was always difficult, particularly in the contracted and saw-edge types of diverticula, and the greatest amount of enlightenment might be gained by demonstrating distensibility after air inflation; the carcinoma was, of course, rigid, and the lumen was not distensible. Differentiation by this means was not without danger, and the air had to be injected carefully and with due regard to the patient's sensation. Displacement upward and to the right of the terminal coils of ileum was a useful secondary sign, and might point to displacement of these coils by an inflammatory mass in the pelvic colon.

Dr. McCoy emphasized the importance of exploring each of several avenues of investigation when examining the colon radiologically. He believed that the investigation of the mucous pattern was all-important, for by it lesions not demonstrable by the older method of complete distension with a barium suspension might be discovered in an early stage. Important work had been performed in this respect by J. O'Sullivan, of Melbourne, and it merited close attention and study. Following in the main the teachings of German authorities, O'Sullivan directed particular attention to the investigation of the barium-coated mucous membrane, and by dosed compression over a limited area he succeeded in demonstrating graphically lesions of the mucous membrane and their extent. This method was of particular value in demonstrating a limited area of diverticulitis, and was preferable to the more generally practised abdominal compression by a wide band. Dr. McCoy then showed a series of cinematograph films illustrating points raised during the discussion.

DR. I. B. JOSE said that with regard to surgical treatment patients with diverticulitis fell into four groups. The first group consisted of those who had a mass in some portion of the abdomen, generally the left iliac region, and who, with rest in bed, non-residue type of dietary, enough liquid paraffin to ensure an easy daily motion, and heat applied in some form to the abdomen, gradually lost their symptoms and the mass slowly resolved. Fortunately this was the course in the majority of cases of diverticulitis; often attacks recurred, even after an interval of many years. The second group was that in which, in spite of this conservative treatment, the abscess increased in size, the symptoms grew worse and the abscess needed surgical drainage. The difficulties of establishing drainage without soiling the peritoneal cavity varied with individual cases. If after drainage the abscess cavity became contaminated with fæces through a connexion with the bowel, Dr. Jose considered that a proximal spur colostomy should be performed to divert the fæces completely. The third group consisted of the fortunately rarer cases, in which, generally from lack of supervision in the earlier stages, rupture of the abscess into the peritoneal cavity occurred. This complication was generally fatal, and as a rule the best that could be done was to establish emergency drainage of the peritoneal and abscess cavities. The fourth group, a small one, consisted of those cases in which the fistula had formed between bowel and bladder. If this did not close spontaneously in a short time, the treatment was to perform a proximal colostomy in the transverse colon, in order to divert the fæces completely for a period long enough to allow the inflammatory condition of the bowel to settle down. This took anything up to over a year, but could be hastened by the application of heat to the abdomen and hot douches to the bowel. It was only after complete subsidence of the inflammatory condition of the bowel that resection of the affected portion of the gut should be undertaken and the fistulous opening in the bladder closed.

Dr. Jose concluded by saying that the same principle of preliminary drainage of the fæces by colostomy should be applied in any case in which it was ultimately advisable to resect the portion of the colon affected with diverticulitis.

DR. A. F. STOKES said that four years previously he had seen a male patient, aged over fifty years, who for many years had been passing foul thick urine and gas *per urethram*, and who also had an ischio-rectal fistula with many openings around the anus. The patient showed him a jar containing half urine and half fæcal matter. The condition was always worse after an aperient had been taken. He had never had any treatment for the condition. He was complaining of general malaise, rigors and loss of appetite. He was examined by a urologist, who failed to find any opening in the urethra or bladder. The fistula was laid open thoroughly, and it eventually healed.

There was some improvement, with a moderate degree of constipation, when urinary antiseptics were used; but a year later the patient's condition became worse than ever, with foul urine and frequent rigors. He was again examined by means of the cystoscope, and an opening was found in the upper posterior wall of the bladder to the left of the mid-line. An operation was performed to cure the condition. A diverticulum was found to be communicating with the bladder. It was removed and the openings into the bladder and bowel were closed. A self-retaining tube was fixed in the bladder. A condition of diverticulosis existed, small fæcal masses being felt in the bowel wall as far as the finger could reach. Unfortunately the patient died four days later of complete suppression of urine.

DR. A. BRITTEN JONES asked Dr. Smeaton for some particulars of his treatment of the vesico-colic fistula. He said that it was sometimes very difficult to diagnose this condition from an ordinary carcinoma. In cases of obstruction he favoured colostomy and prolonged wash-outs before attempting further treatment.

DR. R. E. MAGAREY, in congratulating Dr. Smeaton on his succinct résumé of the subject, said that he was surprised that no member who took part in the discussion had mentioned the difficulty, in female patients, of differentiating a mass due to diverticulitis from an inflamed pelvic tumour. He considered that in some cases it was a very difficult differential diagnosis to make. He recalled that on two occasions his house surgeon had called him to a case in which a diagnosis of an ovarian cyst with a twisted pedicle had been made, and in each case the diagnosis could be made only under general anæsthesia, by identifying each ovary and the uterus independently of the tumour. He had had similar cases in private work, and on two occasions the diagnosis had been made only after exploratory laparotomy. These cases occurred nearly always in fat women at or about the menopause. The menstrual history was usually of no assistance in differential diagnosis, and X ray examination would in these cases mean too much delay.

DR. G. H. BURNELL said that he was surprised that a physician had not been asked to open the discussion, as the treatment of diverticulitis was the province of the physician, and the question of surgical treatment did not come under consideration unless or until one of two conditions arose, namely, infection and obstruction. His interest in the condition had been mainly in the bladder complications which might arise as a result of diverticulitis. He had seen three patients with vesico-colic fistulæ. Some authorities considered that if patients with this complication were left alone they would ultimately reach a state of equilibrium, in which they would not suffer any harmful effects from the escape of fæcal matter from the bowel into the bladder. His experience had not been so fortunate, as the severity of the symptoms of urinary infection had been so marked that he had been compelled to operate. It had also to be remembered that diverticulitis could cause bladder symptoms without there being any fistula present; in fact, the presence of vesical symptoms in a patient with a mass in the pelvis pointed rather to diverticulitis than to carcinoma of the rectum. He admitted that carcinoma of the rectum could cause vesical symptoms, but by the time this happened the diagnosis of carcinoma was usually quite obvious.

With regard to the general treatment of diverticulitis, Dr. Burnell emphasized that the majority of patients would get well if treated by rest in bed and the application of radiant heat to the abdomen. Should this not happen, and should surgical measures be called for, then he found himself becoming more and more conservative in the surgery he practised. If a colostomy became necessary, it must be recognized that such a colostomy would need to be maintained for a very long time before any appreciable benefit would be derived from it. Any surgeon who had seen the extensive low-grade cellulitis of the bowel wall and of the mesocolon, could not fail to appreciate the length of time it would take for such a condition to subside. It had been said that examination with the sigmoidoscope was of little use in the diagnosis of diverticulitis; but it was at least of help in excluding malignant disease, and should therefore be adopted as a routine measure; in rare cases the actual opening of one or more diverticula would be seen.

Dr. Smeaton, in reply to Dr. Britten Jones, said that he always preferred trying prolonged colonic drainage before attempting any further operation, should such still be necessary. He also commented on the great advance made in radiological technique.

Poliomyelitis.

DR. A. R. SOUTHWOOD showed a cinematograph film, kindly lent by Dr. John Dale, Medical Officer of Health for the City of Melbourne, illustrating the manner of spread of anterior poliomyelitis in Melbourne during the first six months of the epidemic. He compared with this the manner of spread in Adelaide, which was shown to be more scattered.

NOTICE.

THE following books have recently been added to the library of the Medical Society of Victoria (the Victorian Branch of the British Medical Association):

Maude E. Abbott: "Atlas of Congenital Cardiac Disease", 1936.

Abortion: Report of the Committee of Inquiry into the Various Aspects on the Problem of Abortion in New Zealand, 1937.

E. W. Adams: "Drug Addiction", 1937.

Charles E. Allen: "The Ova of Ascaris Megalocephala", 1937.

Alexander Gunn Auld: "The Nature and Treatment of Asthma, Hay Fever and Migraine", 1936.

"Australian Army Medical Corps in Egypt: First Australian General Hospital", photographs, 1914-1915.

Percival Bailey: "Intracranial Tumors", 1933.

Baker Institute of Medical Research: "Collected Papers", Number 3, 1937.

A. E. Barclay: "The Digestive Tract: A Radiological Study of its Anatomy, Physiology and Pathology", Second Edition, 1936.

Sir James Barrett (editor): "Save Australia: A Plea for the Right Use of our Flora and Fauna", 1925.

Sir James Barrett: "War Work of the Y.M.C.A. in Egypt", 1919.

Sir Lancelot Barrington-Ward: "The Abdominal Surgery of Children", Second Edition, 1937.

W. W. Bauer and T. G. Hull: "Health Education of the Public: A Practical Manual of Technic", 1937.

W. E. C. Baynes: "Hospital Law Notes: Notes on Points of Law Affecting Voluntary Hospitals", 1937.

G. E. Beaumont and E. C. Dodds: "Recent Advances in Medicine", Eighth Edition, 1936.

Samuel J. Beck: "Introduction to the Rorschach Method: A Manual of Personality Study", 1937.

Edwin Beer: "Tumors of the Urinary Bladder", 1935.

Conrad Berens (editor): "The Eye and its Diseases", 1936.

Joseph W. Bigger: "Handbook of Hygiene", 1937.

C. J. Bond: "Biology and the New Physics: A Plea for a Consistent Philosophy of Life", 1936.
W. R. Brain and E. B. Strauss: "Recent Advances in Urology", Third Edition, 1934.
G. W. Bray: "Recent Advances in Allergy", Third Edition, 1937.
W. E. Bray: "Synopsis of Clinical Laboratory Methods", 1936.
British Medical Association: "Handbook for Qualified Medical Practitioners" (published by the New South Wales Branch), 1935.
British Medical Association: "Special Committees' Reports", 1924-1936.
Esther Lucile Brown: "Nursing as a Profession", 1936.
Esther Lucile Brown: "Physicians and Medical Care", 1937.
Keith Macarthur Brown: "Medical Practice in Old Parramatta: An Historical Review of Village Doctoring in the Colony of New South Wales", 1937.
Sir Walter Langdon Brown and others: "The Place of Psychology in the Medical Curriculum, and Other Papers", 1936.
C. W. Buckley: "Chronic Rheumatic Diseases: Being the Third Annual Report of the British Committee on Chronic Rheumatic Diseases appointed by the Royal College of Physicians", 1937.
L. S. T. Burrell: "Recent Advances in Pulmonary Tuberculosis", Third Edition, 1937.
A. T. Cameron: "Recent Advances in Endocrinology", Third Edition, 1936.
G. P. Chandler: "Allergy in Relation to Lymphadenoma", 1934.
A. J. Clark: "Applied Pharmacology", Sixth Edition, 1937.
W. S. C. Copeman: "Treatment of Rheumatism in General Practice", Second Edition, 1935.
Cyril B. Courville: "Pathology of the Central Nervous System", 1937.
A. J. Cramp: "Nostrums and Quackery", Volumes I to III, 1912-1936.
Elkin P. Cumberbatch: "Diathermy: Including Diathermotherapy and Other Forms of Medical and Surgical Electrothermic Treatment", Third Edition, 1937.
A. Edward Davis: "Cataract: Its Preventive and Medical Treatment", 1937.
Pierre Noël Deschamps: "Royat Treatment in Cardiovascular Disease", 1935.
J. H. Dible: "Recent Advances in Bacteriology", Second Edition, 1932.
W. S. Duke-Elder: "Recent Advances in Ophthalmology", Third Edition, 1934.
W. S. Duke-Elder: "Text-Book of Ophthalmology", Volume II, 1938.
W. F. Dutton and G. B. Lake: "Parenteral Therapy", 1936.
J. Newton Dyson: "The Practice of Ionization", 1936.
T. East and C. Bain: "Recent Advances in Cardiology", Third Edition, 1936.
Harold C. Edwards: "Surgical Emergencies in Children", 1936.
C. L. Evans: "Recent Advances in Physiology", Fifth Edition, 1936.
R. A. Fisher: "The Design of Experiments", 1935.
Medical Research Committee: "Atlas of Gas Poisoning", 1918.
Henry George: "The Condition of Labour", 1930.
Henry George: "Progress and Poverty", Fifty-Second Edition, 1932.
Henry George: "Protection or Free Trade", 1932.
Henry George: "Social Problems", 1932.
R. Ghosh: "Materia Medica and Therapeutics", Fourteenth Edition, 1936.
Margaret Goldsmith: "Florence Nightingale: The Woman and the Legend", 1937.
Thomas A. Gonzales, Vance and Helpern: "Legal Medicine and Toxicology", 1937.
William Hale-White: "Materia Medica, Pharmacy, Pharmacology and Therapeutics", edited by A. H. Douthwaite. Twenty-Second Edition, 1935.
I. Simson Hall: "Diseases of the Nose, Throat and Ear", 1937.
French K. Hansel: "Allergy of the Nose and Paranasal Sinuses", 1936.
B. Hart: "Psychology of Insanity", Fourth Edition, 1936.
C. G. Hartman: "Time of Ovulation in Women: A Study on the Fertile Period in the Menstrual Cycle", 1936.
C. L. Hewer: "Recent Advances in Anæsthesia and Analgesia", Second Edition, 1937.
Charles Hill and H. A. Clegg: "What is Osteopathy?" 1937.
John Homans: "A Textbook of Surgery", Fourth Edition, 1936.
F. Howard Humphris and Leonard Williams: "Emanotherapy", 1937.
E. B. Jamieson: "Illustrations of Regional Anatomy", Second Edition, 1937. "Section I: Central Nervous System"; "Section II: Head and Neck"; "Section III: Abdomen"; "Section IV: Pelvis"; "Section V: Thorax".
Ira I. Kaplan: "Radiation Therapy: Its Use in the Treatment of Benign and Malignant Conditions", 1937.
C. H. Kellaway and others: "Postgraduate Lectures", Melbourne Permanent Post-Graduate Committee, 1924.
J. M. Munro Kerr: "Operative Obstetrics", Fourth Edition, 1937.
E. S. J. King: "Localized Rarefying Conditions of Bone", 1935.
J. Balfour Kirk: "A Manual of Practical Tropical Sanitation", 1937.
J. Lachlan-Cope: "Family Medical Insurance: A New Scheme with Evidence", 1936.
D. Lees: "Practical Methods in the Diagnosis and Treatment of Venereal Diseases", Third Edition, 1937.
T. M. Ling: "Recent Advances in Industrial Hygiene and Medicine", 1937.
Fred B. Lund: "Greek Medicine", *Clio Medica*, Volume XVIII, 1936.
Drew Luten: "The Clinical Use of Digitalis", 1936.
R. W. MacKenna: "Diseases of the Skin", Fourth Edition, 1937.
T. P. McMurray: "A Practice of Orthopædic Surgery", 1937.
Rodney Maingot: "Postgraduate Surgery", Volumes I and II, 1936.
Ida Mann: "Developmental Abnormalities of the Eye", 1937.
Jonathan Meakins: "Medical Essays", 1937.
Jonathan Meakins: "Practice of Medicine", 1936.
E. H. Molesworth: "Introduction to Dermatology", 1937.
Margaret Morris: "Maternity and Post-Operative Exercises", 1936.
Bessie L. Moses: "Contraception as a Therapeutic Measure", 1936.
Richard Neale: "The Medical Digest, 1840-1899", Third Edition, 1901.
The American Medical Association: "New and Non-Official Remedies", 1936.
T. B. Nicholls: "Organization, Strategy and Tactics of the Army Medical Services in War", 1937.
Lois Oakes: "A Pocket Medical Dictionary", Third Edition, 1938.
A. Bertha Parry: "It's in Your Kitchen: Simple Remedies and Hints for Everyone", 1936.
W. J. Pearson and W. G. Wyllie: "Recent Advances in Diseases of Children", Third Edition, 1935.
Margaret Phillips: "The Education of the Emotions through Sentiment Development", 1937.
S. D. Porteus: "Primitive Intelligence and Environment", 1937.
F. J. Poynton and B. Schlesinger: "Recent Advances in the Study of Rheumatism", Second Edition, 1937.
R. E. Priestley: "The University and the National Life", 1937.
A. Lisle Punch and F. A. Knott: "Modern Treatment of Diseases of the Respiratory System", 1936.
"Queen Charlotte's Textbook of Obstetrics", by various writers, Fourth Edition, 1936.

Carl O. Rice: "Injection Treatment of Hernia", 1937.
Rudolf Roosen: "A Theory of Cancer and the Practitioner and Mnemotherapy", 1936.
A. C. Roxburgh: "Common Skin Diseases", Fourth Edition, 1937.
Royal Life Saving Society: "Illustrated Handbook of Instruction", Nineteenth Edition, 1932.
F. Sauerbruch and L. O'Shaughnessy: "Thoracic Surgery", 1937.
Oskar Schaeffer: "Atlas and Epitome of Operative Gynecology", 1904.
Edward A. Schumann: "A Textbook of Obstetrics", 1936.
G. L. Scott: "The Morphine Habit and its Painless Treatment", Second Edition, 1937.
W. Gordon Sears: "Vade Mecum of Medical Treatment", 1937.
Alfred Rives Shands: "Handbook of Orthopædic Surgery", 1937.
David H. Shelling: "Parathyroids in Health and in Disease", 1935.
S. Levy Simpson: "Medical Diagnosis: Some Clinical Aspects", 1937.
E. P. Sloan: "The Thyroid: Surgery, Syndromes, Treatment", 1936.
Greenfield Sluder: "Tonsillectomy by Means of the Alveolar Eminence of the Mandible and a Guillotine", 1923.
N. Ross Smith: "Elements of Orthopædic Surgery", 1937.
William Smith: "Clinical Pathology and the Technique of Collecting Specimens", 1935.
Bethel Solomons: "An Epitome of Obstetrical Diagnosis and Treatment in General Practice", Volumes I and II, 1936.
Professor Arthur Stoll: "The Cardiac Glycosides", 1937.
Marie C. Stopes: "Change of Life in Men and Women", 1936.
N. A. Stutterheim: "Eyestrain and Convergence", 1937.
Georg Sultan: "Abdominal Hernias", Saunders's Medical Hand-Atlas, 1902.
Don C. Sutton: "Physical Diagnosis", 1937.
Keith S. Thompson: "Elementary Pathology: An Introduction to the Process of Disease", 1936.
E. Quin Thornton: "A Medical Formulary", Fourteenth Edition, 1937.
A. T. Todd: "Treatment of Some Chronic and 'Incurable' Diseases", 1937.
W. W. C. Topley and G. S. Wilson: "The Principles of Bacteriology and Immunity", Volumes I and II, 1929.
René Vallery-Radot: "The Life of Pasteur", 1917.
Cecil Wall: "The History of the Surgeon's Company, 1745-1800", 1937.
J. P. Warbasse: "The Doctor and the Public", 1935.
G. B. Webb: "Tuberculosis", *Clio Medica*, 1936.
Clifford White and others (editors): "Diseases of Women", by ten teachers, Sixth Edition, 1938.
Gwynne Williams: "Minor Surgery and the Treatment of Fractures", Twenty-First Edition, 1936.
L. Williams: "Minor Maladies and their Treatment", Seventh Edition, 1937.
R. C. Wingfield: "Pulmonary Tuberculosis in Practice: A Modern Conception", 1937.
Theodore Wiprud: "The Business Side of Medical Practice", 1937.
William Wolf: "Endocrinology in Modern Practice", 1937.
S. Wright: "Applied Physiology", Sixth Edition, 1937.
"Year Book of General Surgery", 1937, edited by E. A. Graham.

NOMINATIONS AND ELECTIONS.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Rainbow, James Manning, M.B., Ch.M., 1924 (Univ. Sydney), 231, Macquarie Street, Sydney.

Public Health.

NATIONAL HEALTH INSURANCE.

THE following statement is published by the authority of the executive committee of the Federal Council of the British Medical Association.

It is important that members of the British Medical Association, in order to review the events in the negotiations with the Commonwealth Government in proper perspective, should know the following facts:

When national health insurance was first seriously mooted by the Commonwealth Government, the Federal Council of the British Medical Association in Australia at once took steps to ensure that they would be consulted, and an official promise was given in that respect. The Federal Council then took steps to appoint an executive committee to negotiate.

This promise was duly honoured, and a meeting of the executive committee and the Government representatives took place in Melbourne on March 10, 1938.

Although the executive committee regarded the Government proposals as inadequate, no difficulty was experienced in reaching an agreement with regard to the conditions of service other than financial. In regard to the financial aspect of these conditions an impasse was reached and the conference adjourned to enable the executive to make further proposals.

The conference resumed in Sydney on March 27, when the executive committee proposed that the capitation fee should be 14s. At the conclusion of the conference, when ponderable factors, which could be actually assessed, were considered, it did not appear possible that the Commonwealth Government representatives would agree to a higher capitation fee than 11s.; but there were imponderable factors, of great importance, which could not be actually assessed in money.

At the conclusion of this conference with the Commonwealth representatives, they were informed that, whereas the Federal executive committee had come to this agreement, it distinctly stated that the members of the Association could not be bound by it, and it made this statement knowing that the profession at large were entirely ignorant of the proposals. The profession remained in this state of ignorance until the introduction of the bill, the Federal executive having given an undertaking, at the request of the Government representatives, that these terms should not be disclosed. This promise was duly honoured, much to the detriment of the profession.

Since the conference between the representatives of the Commonwealth Government and the executive of the Federal Council of the British Medical Association in Australia on the medical benefit section of the National Health and Pensions Insurance Bill concluded, the agreement reached has been placed before the medical profession in Australia and an opportunity has been afforded them of discussing the bill.

Whilst no objection has been made to the inclusion of medical benefits in the bill, there are many features of the proposed terms of service which appear to be unsatisfactory to the profession and which undoubtedly would affect the smooth and efficient working of the service.

At a meeting of the executive committee of the Federal Council held at Sydney on May 21, 1938, the objections of the profession were considered, and consequent on this representations are being made to the Federal Government on the following lines:

1. *Capitation Fee.*—This is regarded as being totally inadequate. The minimum rate that would be acceptable to the profession is 14s. in the metropolitan areas, with an additional 25% for country areas. In Australia the country practitioner has always been paid at a higher rate under contract practice than the city practitioner, the average difference being between 25% and 30%. The reasons for this briefly are:

(a) The isolation of the country practitioner and lack of amenities.

(b) The irregular hours of working of country practitioners.

(c) The fact that the country practitioner, unlike the city practitioner, is unable to transfer his difficult cases to a large hospital.

(d) As an encouragement to doctors to go out into the sparsely populated areas. The provision of medical services in these areas is a very real problem throughout Australia.

(e) In certain areas the additional cost of living.

2. *Mileage.*—This is also regarded as being inadequate, the minimum rate which would be acceptable being 2s. 6d., 6d. of which should be payable by the patient. Under contract practice in Australia mileage is always payable by the patient as a deterrent against unnecessary calls. It is also considered that mileage should be paid beyond two miles, a radius recognized by Government departments, such as the Repatriation Department.

3. *Night Calls.*—There is universal dissatisfaction in regard to the absence of any night fees. The fee need not be large—2s. 6d. would be sufficient—and it is not to be regarded as income-producing, but purely as a restriction in order to prevent an excessive amount of night work. The policy of asking the doctor to make a complaint when he considers a call unnecessary or unreasonable does not appeal to the profession. The night fee would be payable by the patient for calls between 8 p.m. and 8 a.m.

4. *Services to be Excluded.*—In addition to those specified in the proposed terms, the following require amendment:

(a) *Anæsthetics.*—As anæsthetics are actually outside the terms of service, the view of the profession is that there should be no interference with their relationships with their patients either in regard to the fee or to the type of anæsthetic to be administered.

(b) There is universal disapproval of Section 50 (1) of the National Health and Pensions Insurance Bill, and it is thought that the section should be amended by the addition of the following words: "except in the case of acute alcoholism and acute venereal disease". Section 50 (1) reads as follows: "A person shall not be disqualified from receiving medical benefit under this Act by reason that his sickness has been caused by his own misconduct."

(c) *Fractures and Dislocations.*—The profession particularly desires that the more difficult and complicated fractures and dislocations be excluded and that schedules should be drawn up of such fractures and dislocations.

(d) Premature births, miscarriages and abortions, in the view of the profession, should not be included in the terms of service.

Having regard to the views of the profession as set out above, the Federal executive is strongly urging that serious consideration be given to the whole question of the terms of service.

It is being pointed out that one of the conditions of the agreement with the Commonwealth representatives was that there should be a clause in the National Health and Pensions Insurance Bill excluding from any medical benefits for sickness or accident arising from his employment any insured person entitled to the benefits of any State or Commonwealth *Workers' Compensation Act* or *Employers' Liability Act*. It has been noted, however, that while Section 69 deals with sickness or disablement benefits payable to an insured person entitled to the benefits of any act or State act, no reference whatever is made to the question of medical benefits.

As it is not a matter that the committee considers can be adequately dealt with by regulation, the committee has urged that, in accordance with the agreement, a clause be included in the bill dealing with this particular question.

In regard to Clause 115 of the bill, the Federal executive is pointing out that the amount allocated is inadequate to provide for the complete medical service envisaged, and therefore is urging that consideration be given to amending this amount.

When the question of medical benefits was being discussed at the meetings in Melbourne and Sydney, it was agreed that X ray and pathological examinations should not be included within the scope of the general practitioner service.

As efficient treatment by the general practitioner depends on the early and accurate recognition of the nature of the ailment or injury, the executive is of the opinion that the provision of X ray and pathological services to insured persons is a necessity. In order to provide such services, it is suggested that a specialist service pool, quite apart from the medical benefit account, be constituted, from which payments could be made to the practitioners rendering these services.

Correspondence.

PULMONARY TUBERCULOSIS.

SIR: Not everyone will agree with the remarks of your reviewer of Dr. R. C. Wingfield's book "Pulmonary Tuberculosis in Practice". His statement that "the only safe procedure is to 'replace' every effusion of tuberculous origin" would, in the opinion of many authorities, just as surely call for comment as Dr. Wingfield's view so summarily rejected.

My former chief, Dr. R. R. Trail, between 1926 and 1933 admitted 61 cases of pleural effusion to Midhurst Sanatorium (*vide The British Medical Journal*, April 27, 1935). Up to the time of the article quoted only two of these developed any further signs of tuberculosis. They both died of tuberculous meningitis, and it is very doubtful whether interference would have prevented this termination. Needless to say, all the cases had a sufficient period of rest, and he quotes others who had similarly satisfactory results from leaving the effusions severely alone, sufficient rest again being a *sine qua non*. Direct or presumptive evidence of lung involvement can be obtained (points also discussed in Trail's article) and in these cases air replacement may be indicated. But in the absence of any such signs I for one would not have my pleural effusion "replaced" should I ever have one.

Yours, etc.,

GERALD C. MOSS.

246, St. George's Terrace,
Perth,
Western Australia.
May 6, 1938.

COUNTRY REPRESENTATION ON BRANCH COUNCILS.

SIR: The handling of the medical part of the national insurance proposals by our councils brings us another sharp reminder that our representatives are not competent to speak for the large body of country practitioners. As the members of the council of the New South Wales Branch are at present elected, that is inevitable, for, excepting a few from the suburbs, they have had their mental horizon limited by Macquarie Street for decades, and cannot have any idea of the problems of country practice.

There are two serious obstacles to country representation: (i) it would be difficult for country members to gain election; (ii) if they were elected they would have to sacrifice a good deal of time and money to attend council meetings regularly.

To overcome these obstacles I suggest: (i) Divide the State into a number of areas, say six—north coast and tablelands, north-west, central west, south-west, south coast and tablelands, central tablelands. Give each area the right to elect one representative. (ii) Let the Branch make an allowance to cover travelling expenses and time lost to each representative for each council meeting which he attends.

No doubt this suggestion will seem quite dreadfully revolutionary to our more conservative brethren (a conservative has been defined as one who believes that nothing should ever be done for the first time); but I think that if some such scheme were tried it would increase the contentment and well-being of the profession in this State.

Yours, etc.,

E. P. DARK.

141, Cascade Street,
Katoomba,
New South Wales.
May 13, 1938.

A BACTERIOLOGICAL AND CLINICAL STUDY OF THE PROFESSIONAL PERSONNEL OF MATERNITY HOSPITALS.

SIR: In the Sydney *Daily Telegraph* of April 28, 1938, under the title of "Save the Mothers", is an account of investigations carried out by Dr. Bryce and myself. The account is based on an article published by us in THE MEDICAL JOURNAL OF AUSTRALIA of April 9, 1938. In our article a discussion of previous work done by Colebrook, Smith and others was given. This was omitted in the article in the *Daily Telegraph*, which has led to an undeserved claim to originality and an exaggerated importance being attached to our investigations.

I would be grateful if you would publish this, as we were in no way associated with the account in the *Daily Telegraph*.

Yours, etc.,

PHYLLIS TEWSLEY, M.B., B.S.

2, Donna Buang Street,
Camberwell,
Victoria, E.6.
May 10, 1938.

Medical Prizes.

WALTER BURFITT PRIZE.

WE have been asked by the Honorary Secretaries of the Royal Society of New South Wales to publish the following notice.

A prize, known as the Walter Burfitt Prize, has been established by the Royal Society of New South Wales as the result of a generous gift to the society by Dr. W. F. Burfitt, B.A., M.B., Ch.M., B.Sc., of Sydney.

The following conditions for the award of the prize have been adopted by the society:

1. The Walter Burfitt Prize shall be awarded at intervals of three years to the worker in pure or applied science, resident in Australia or New Zealand, whose papers and other contributions published during the past three years are deemed of the highest scientific merit, account being taken only of investigations described for the first time, and carried out by the author mainly in these Dominions.

2. The prize may be awarded to two authors working in collaboration.

3. The prize shall consist of a medal and the sum of £50.

It was decided that the Australian National Research Council, the Royal Societies and universities of the various States and of New Zealand, and other scientific bodies in Australia and New Zealand, should be invited to submit the names and publications of workers whom they deem worthy of consideration, and that scientific workers generally should be invited to submit their publications directly, while the Royal Society might award the prize to a worker whose name had not actually been submitted to it.

The fourth award will be made in November, 1938, for work published during the three years ending December 31, 1937. Nominations and publications should be submitted to the Royal Society not later than August 31, 1938.

A. P. ELKIN,
C. ANDERSON,
Honorary Secretaries.

Sydney, May, 1938.

THE HUNTERIAN GOLD MEDAL FOR GENERAL PRACTITIONERS.

WE have been asked by the Honorary Secretary of the Hunterian Society to publish the following notice.

Any registered general practitioner resident within the British Empire is eligible to compete for the Hunterian Gold Medal for General Practitioners. The medal is awarded annually to the writer of the best essay on a subject selected by the society. Competitors, men or women, must be engaged in general practice, and essays should be sent in by December 31. The essay must be unpublished and original, and be based on the candidate's own observation; but it may contain excerpts from the literature on the subject, provided that reference be made to the articles from which they are taken. A copy of the rules and any further information can be obtained on application to the Honorary Secretary, Mr. Arthur E. Perritt, 27, Harley Street, London, W.1.

The subject selected for the essay for 1938 is "The Management of Inoperable Malignant Disease in General Practice", and for 1939, "Treatment of Obesity in General Practice".

The 1937 Hunterian Gold Medal for General Practitioners was won by Dr. J. Wilson Reid, of Anglesey, for his essay entitled "The Prognosis and Care of Heart Disease in General Practice".

Analytical Department.

"GRANUMA."

"GRANUMA" is a product of Messrs. Inglis, Limited. A sample was submitted to our analyst, who reports as follows:

I have analysed the sample of "Granuma" supplied by you, with the following results.

Moisture	10·20%
Ash	1·31%
Protein	11·22%
Fat	1·84%
Fibre	1·97%
Carbohydrate	73·46%

The analysis compares well with that of whole wheat and suggests that "Granuma" is a whole-wheat product. It should have the same nutritive value as any other whole-wheat meal.

"Granuma" is a palatable food and can be recommended with confidence by medical practitioners.

Books Received.

WORKBOOK IN ELEMENTARY DIAGNOSIS FOR TEACHING CLINICAL HISTORY RECORDING AND PHYSICAL DIAGNOSIS, by L. Clendening; 1938. St. Louis: The C. V. Mosby Company; Melbourne: W. Ramsay (Surgical) Proprietary Limited. Demy 4to, pp. 167, with illustrations. Price: 18s. net.

MANAGEMENT OF THE SICK INFANT AND CHILD, by L. Porter, B.S., M.D., M.R.C.S., L.R.C.P., and W. E. Carter, M.D.; Fifth Edition, revised; 1938. St Louis: The C. V. Mosby Company; Melbourne: W. Ramsay (Surgical) Proprietary Limited. Royal 8vo, pp. 874, with illustrations. Price: 63s. net.

SEX IN EVERYDAY LIFE, by E. F. Griffith, M.R.C.S., L.R.C.P., with an introduction by Sir Walter Langdon-Brown, M.D., D.Sc., F.R.C.P., and a foreword by H. A. Gray, D.D.; 1938. London: George Allen and Unwin Limited. Demy 8vo, pp. 378. Price: 10s. 6d. net.

GLAISTER'S MEDICAL JURISPRUDENCE AND TOXICOLOGY, edited by J. Glaister, M.D., D.Sc.; Sixth Edition; 1938. Edinburgh: E. and S. Livingstone. Demy 8vo, pp. 760, with 107 illustrations and eight plates. Price: 25s. net.

STUDIES ON THE PHYSIOLOGY OF THE EYE: STILL REACTION, SLEEP, DREAMS, HIBERNATION, REPRESSION, HYPNOSIS, NARCOSIS, COMA AND ALLIED CONDITIONS, by J. G. Byrne; Reissue, with Supplement; 1938. London: H. K. Lewis and Company Limited. Royal 8vo, pp. 436, with 48 illustrations. Price: 40s. net.

AIDS TO BIOCHEMISTRY, by E. H. Cooper, D.Sc., F.I.C., A.R.C.S., and S. D. Nicholas, B.A., A.I.C.; 1938. London: Baillière, Tindall and Cox. Foolscap 8vo, pp. 222. Price: 4s. 6d. net.

AIDS TO BACTERIOLOGY, by W. Partridge, F.I.C.; Sixth Edition, revised by H. W. Scott-Wilson, B.Sc., B.M., B.Ch.; 1938. London: Baillière, Tindall and Cox. Foolscap 8vo, pp. 307. Price: 5s. net.

OCCUPATIONAL THERAPY: AN ADDENDUM TO THE HANDBOOK FOR MENTAL NURSES; 1938. London: Baillière, Tindall and Cox, for the Royal Medico-Psychological Association. Demy 8vo, pp. 16. Price: 6d. net.

FORENSIC MEDICINE: A TEXT-BOOK FOR STUDENTS AND PRACTITIONERS, by S. Smith, M.D., F.R.C.P., D.P.H., with an introduction by Professor Harvey Littlejohn, F.R.C.S., F.R.S.E.; Sixth Edition; 1938. London: J. and A. Churchill Limited. Demy 8vo, pp. 668, with illustrations. Price: 24s. net.

Diary for the Month.

JUNE 1.—Victorian Branch, B.M.A.: Branch.
JUNE 1.—Western Australian Branch, B.M.A.: Council.
JUNE 2.—South Australian Branch, B.M.A.: Council.
JUNE 3.—Queensland Branch, B.M.A.: Branch.
JUNE 7.—New South Wales Branch, B.M.A.: Organization and Science Committee.
JUNE 10.—Queensland Branch, B.M.A.: Council.
JUNE 14.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JUNE 15.—Western Australian Branch, B.M.A.: Branch.
JUNE 21.—New South Wales Branch, B.M.A.: Ethics Committee.
JUNE 22.—Victorian Branch, B.M.A.: Council.
JUNE 23.—New South Wales Branch, B.M.A.: Clinical Meeting.
JUNE 24.—Queensland Branch, B.M.A.: Council.
JUNE 28.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JUNE 30.—South Australian Branch, B.M.A.: Branch.
JUNE 30.—New South Wales Branch, B.M.A.: Branch.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xvi-xix.

FREMANTLE HOSPITAL, FREMANTLE, WESTERN AUSTRALIA: Medical Superintendent.
THE BAKER MEDICAL RESEARCH INSTITUTE, MELBOURNE, VICTORIA: Director.
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